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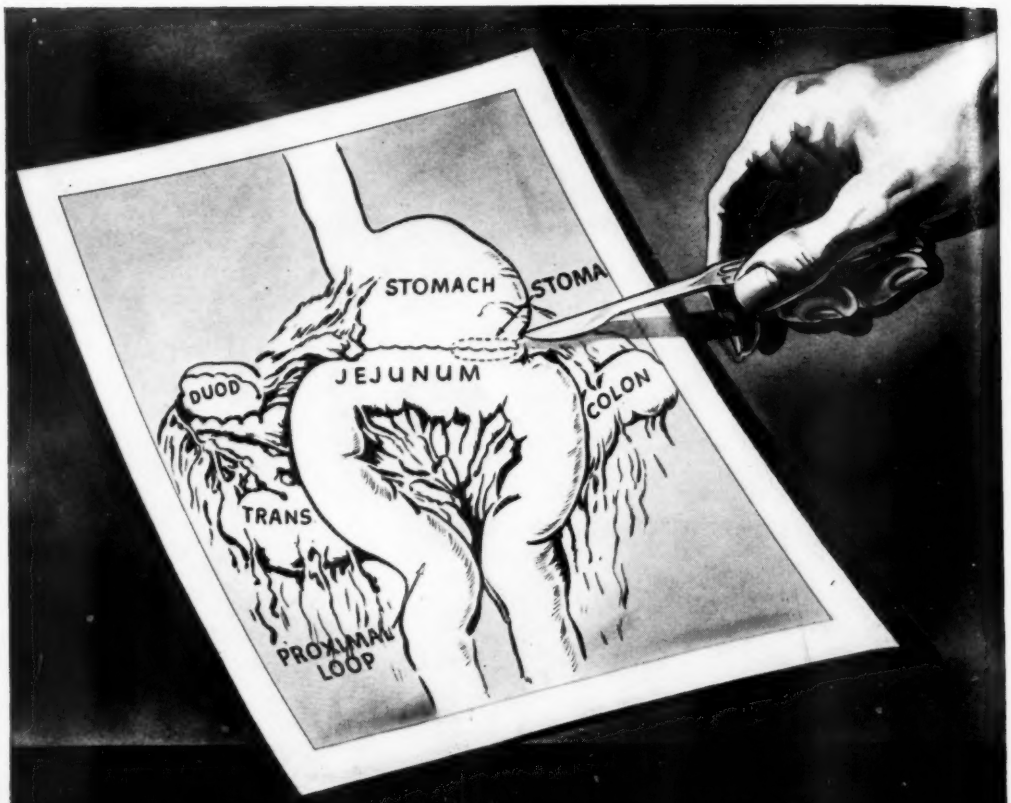

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Minnesota Medicine

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

Volume 27 January, 1944 No. 1

DIAGNOSIS OF GLAUCOMA

A. G. ATHENS, M.D.

Duluth, Minnesota

OF all the causes of blindness in the adult, glaucoma ranks first in the United States. It is responsible for one-third of all blindness past middle life. More eyes are destroyed by this disease than by tuberculosis, syphilis and gonorrhea combined. It is estimated that there are nearly a quarter million people in the United States suffering from glaucoma. Of the 120,000 known blind in this country, 30,000 are blind from glaucoma. Most of these are receiving aid in the form of pensions for the blind. At one dollar per day this amounts to over ten million dollars annually. Thus, it will be seen, glaucoma becomes an economic as well as a health problem.

Our greatest problem, in glaucoma, is early diagnosis. It is possible to discover this disease before there is any loss of vision. The early symptoms are generally overlooked or ignored by the patient, however, and a high percentage of the patients, by the time they reach the ophthalmologist, have lost a large part of their vision. In a recent study of 1,876 glaucoma patients seen at Will's Eye Hospital in Philadelphia,[5] 784 eyes had vision reduced below 20/200 when first admitted. These eyes were industrially blind. DeGrosz,[3] who, during thirty-one years as head of the leading eye clinic in Budapest, operated 4,326 patients with glaucoma, declared that only 13 per cent came to him within the first month after the onset of symptoms.

As in cancer and tuberculosis good therapeutic results are contingent on early diagnosis. Crawford,[2] in a statistical study of glaucoma patients at the University of Minnesota Hospital, found that of those seen within three months of the onset of symptoms, 85 per cent obtained good results from treatment; while, of those cases seen from twelve to twenty-five months after onset of symptoms, only 33 per cent could be said to have had good results.

With these facts in mind we, in ophthalmology, are coming to you in general practice with an appeal for help in early diagnosis of this destructive disease. We believe that you are in position to materially improve these statistics. Only a small percentage of the people ever see the ophthalmologist and many of these are referred for specific reasons, while the great majority of the people, whether ill or not, pass through your offices. Much blindness will be avoided when the early signs of glaucoma are recognized in the general physical checkup and in examinations for jobs in industry and for life insurance made by you in general practice.

Early diagnosis is doubly important because, vision once lost from glaucoma, cannot be regained. There is at present no cure. At best we can only hold the ravages of the disease in check and preserve the vision that remains. The earlier the treatment is begun, however, the less is the irreparable damage to the eye and also the easier it is to bring under control the high intraocular tension which is responsible for the loss of vision.

We wish to point out some of these early symptoms and suggest ways in which you will be able to recognize the disease in the stage when good vision can be preserved.

Read at the annual meeting of the Minnesota State Medical Association, Minneapolis, Minnesota, May 18, 1943.

All glaucoma may be roughly divided into two groups:

I. Primary (simple, chronic or compensated)

II. Secondary

A. That due to mechanical obstruction to the outflow of aqueous with inflammatory products or to sudden closure of a narrow anterior chamber angle. (Acute inflammatory, congestive or uncompensated)

B. That due to congenital defects in the drainage system. (Congenital glaucoma, buphthalmos)

C. Glaucoma secondary to—

1. Intraocular tumor
2. Iritis with closure of pupil
3. Obstruction of venous drainage from the eye (thrombosis of retinal vein)

In this discussion we will consider, in the main, the primary or compensated type. The others will be discussed but briefly here.

Acute inflammatory glaucoma is a rare disease. The symptoms are excruciating pain, violent congestion, steamy cornea, sudden loss of vision, often to the point of complete blindness, widely fixed pupil and an extremely hard eye ball. These patients are so violently ill that should any of you see one you would lose no time in getting him to the nearest ophthalmologist for appropriate treatment. This type therefore offers little difficulty in diagnosis. After such an acute attack, however, iris adhesions may be present leading to a mistaken diagnosis of simple iritis. Mild congestive attacks, without pain or any of the other above symptoms, may occur in simple glaucoma. During these the tension is higher than usual and the vision somewhat blurred.

Unusually large, attractive eyes or a corneal haze seen in a young baby should lead to suspicion of congenital glaucoma or buphthalmos and direct one to investigate the intraocular tension. Fortunately recent developments in surgery[1] hold promise of cure for these unfortunate children.

Glaucoma resulting from intraocular tumor, hemorrhage, iritis or retinal venous thrombosis usually is associated with marked loss of vision.

In primary or compensated glaucoma, to which we will now devote our discussion, the onset is insidious. Herein lies its chief mischief and the reason it is so often overlooked in the early stages. There is no pain, or no more than a slight discomfort or sensation of fullness in the eye. This may be noted after a full meal, on taking stimulants, or after viewing a movie. Delayed adaptation of the eyes to darkness may, but does not necessarily, indicate early glaucoma. This may be demonstrated when one encounters difficulty in finding a seat on first entering a darkened theatre. A slight blurring of the vision is commonly complained of and glasses are sought to correct this. Several pair of glasses may be prescribed by optometrists before the help of an ophthalmologist is sought. On occasion bright rings or halos may appear around lights. This usually occurs when the tension is sufficiently high to result in edema of the cornea.

Increased intraocular tension is the most characteristic feature of the disease and is responsible for most of the signs and symptoms. The tension varies with the time of day, being highest in the early morning hours before arising, tapering off during the day and beginning to rise again on retiring. This is thought to be largely due to absence of the massaging effect of the extraocular muscles in sleep and its presence when awake.[4] The fact that the pupil dilates when the eyes are closed in sleep is also probably a factor. The tension is increased in excitement and emotion or on physical effort. It is elevated by taking stimulants, particularly coffee and tea or on rapidly drinking large amounts of water.

The size of the pupil is a fairly good index of the height of the tension, a wide pupil indicating high tension and vice versa. Any drug which dilates the pupil, such as belladonna, cocaine, atropine, scopolamine or benzedrine, is almost sure to produce a sharp rise in tension in a glaucomatous eye. This is brought about by thickening of the iris at the shallowest area in an already shallow anterior chamber angle, thus blocking the flow of aqueous to the normal outlet through the canal of Schlemm. Drugs which contract the pupil, such as pilocarpine and eserin have the opposite effect and tend to lower the tension by thinning out the root of the iris and thereby opening the anterior chamber angle.

The intraocular tension is measured by the ophthalmologist by means of an instrument, the tonometer. By constant practice, however, a fairly accurate estimate of the tension can be made with the fingers. By resting the last three fingers of both hands on the patient's forehead and the two thumbs on the cheek below the eye, the two index fingers are then used to palpate the sclera through the lid as the patient's gaze is directed downward. The same alternate pressure is made that one uses to test for fluctuation in a suspected

abscess. Repeated palpation at every opportunity will soon give the "feel" of the normal tension and enable one to recognize any appreciable variation from this.

The normal tension ranges from fifteen to twenty-five mm. of mercury as measured with the tonometer on the cornea. If the tension remains much above the normal for very long, permanent injury to the optic nerve fibers results. The same result ensues following repeated sharp, transient elevations of the tension. Undue stretching of the nerve fibers and pressure on them as they bend over the sharp edges of the scleral ring at the disc results in their atrophy and death of their ganglion cells in the retina. Due to a peculiar anatomical arrangement, the fibers which arch temporalward above and below the disc are the first to suffer. This produces an elongation of the normal blind spot in the visual field, an important early diagnostic sign. Further extension of this damage produces a sector or step-like defect in the nasal half of the field. Still further damage results in concentric contraction of the entire field. While there may be frequent, transient blurring of the vision at any stage, the central vision is generally good until late in the disease, even when only a very small field remains. The visual fields for colors are lost before the form fields, the blue being the first to show contraction. The ability to recognize blue may be entirely gone before the form fields are appreciably contracted. This I believe to be an important sign in early diagnosis and it requires no special training or equipment to test for it.

It is recommended that the internist and the general practitioner have some form of tangent screen for charting the visual fields. These may be obtained at any optical supply house at small cost or one can easily be made at nominal expense. The charting of the visual fields is not only useful in the diagnosis of glaucoma but is extremely valuable in the localization of intracranial lesions which compress the optic tracts or centers. Any textbook on perimetry will furnish all the instruction necessary to the technique of charting the fields.

Continued high intraocular tension soon results in excavation of the optic disc. One must distinguish this from the normal, or physiological, depression or cup which varies greatly in size. To study this pathological picture requires the use of the ophthalmoscope. Everyone in general practice should learn to use this important diagnostic instrument. The detection of glaucoma is only one of its many advantages. A general physical examination is not complete without a study of the ocular fundi. The normal physiological cup is generally funnel shaped with sloping walls, is near the disc center and never reaches to the margin. The vessels show little or no deviation from a straight line as they cross the disc margin. In glaucoma the cup is enlarged, reaching, early in the disease, to the very edge. The vessels, as they cross the border, appear to curve sharply and drop away, as they follow the undermined edges, to reappear again at the bottom. When the bottom of the cup is brought into focus the white lattice-like lamina cribrosa is clearly seen. When one has become familiar with the normal fundus picture it will be noted that the retinal arteries normally show, in the adult, little or no pulsation; while in the glaucomatous eye, with high tension, a bounding pulsation is seen.

Let me here warn against the use of any drug to dilate the pupil where there is the least suspicion of glaucoma. Such ill considered use of a mydriatic may precipitate an attack of congestive glaucoma which would be difficult, if not impossible, to control without surgery. If the pupils are small, allowing the patient to sit in the dark for a few minutes will often bring about dilation sufficient for examination of the fundus. Atropine should not be used in the eyes of an adult over forty except under the supervision of an ophthalmologist.

Not infrequently cataract accompanies glaucoma and the physician is led to assume that the patient's blindness is due wholly to the former. Such a patient was recently referred to the writer for cataract surgery. The tension was found to be extremely high and the vision reduced to light perception. This patient had first noted impairment of vision one and one-half years before. When seen by the writer it was too late for cataract surgery. If the estimation of the intraocular tension is made a part of the routine examination such a tragic error will be avoided.

Most cases of glaucoma are discovered by the ophthalmologist when they come for refraction. Nearly all of them feel that they haven't had a proper refraction and that all they need is a little stronger pair of glasses. Unfortunately many of them will wander from one optometrist to another over a period of a year or more and finally come

with several pair of lenses, none of which has been satisfactory. The true cause of their difficulty has been completely missed. The optometrist is not trained to diagnose disease. The practice, therefore, of some medical men of referring patients to optometrists for refraction must be condemned. It is only fair to the patient that he have a thorough and complete examination of his eyes which every ophthalmologist routinely makes at the time of refraction.

All treatment for glaucoma has, as its objective, lowering of the intraocular tension to within normal limits and keeping it there. If the tension can be lowered and kept within normal limits with miotics and the patient is intelligent and cooperative this is the course followed. In advanced cases miotics will often not control the tension. In others the patients will not coöperate. Surgery must then be resorted to. In general, surgery consists either of procedures which aim to open the anterior chamber angle to afford better drainage of aqueous through the normal route or fistulizing operations by which the aqueous is diverted into the subconjunctival space to be absorbed there. Some operations combine these two principles. More than one operation may be required. The earlier in the disease the operation is performed the more successful is the result.

When the tension is once normalized the patient's life and habits must be regulated as long as he lives. It should be remembered that primary glaucoma is never cured. Any vision lost through atrophy of the nerve elements is not regained. However, if the tension is kept under control, either by means of miotics or surgery, good visual function may often be maintained indefinitely. Treatment, therefore, is never ended. Periodic examination of the visual acuity, the fields of vision and the intraocular tension must be regularly made. The patient can never safely be discharged from observation. To ignore this fact often leads to a false belief, by the patient, that he is cured and to neglect of his treatment. Stopping the treatment generally results in rapid deterioration of the vision and, often, a very painful, blind eye.

Here the general practitioner can further cooperate by keeping in contact with the glaucoma patient and seeing to it that adequate supervision is not neglected. It is to be hoped that some follow-up method may be instituted in Minnesota whereby the glaucoma patient may, through education and persuasion, be made to understand the gravity of his disease and the importance of regular visits to his ophthalmologist for control of the tension. "It is better and more economical to prevent blindness than to subsidize the blind."[6]

Summary

Statistics are quoted to show that glaucoma is becoming an important economic as well as a health problem in the United States. The importance of early diagnosis in the control of this disease is stressed. The general practitioner is in position to play an important role in its control. A brief review of the leading signs and symptoms is made to aid the general practitioner in detecting glaucoma in the early stages when treatment is effectual in controlling the tension and preserving useful vision. A plea is made for an estimation of the intraocular tension and a study of the ocular fundi with the ophthalmoscope as routine procedures in every general physical examination.

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To help quiet the convoy-worn nerves of American merchant seamen, the Medical and Surgical Relief Committee of America has donated to the War Shipping Administration 4,000 capsules of sedatives requested for use in recuperation centers in England and North Africa, according to a report by Dr. Joseph P. Hoguet, medical director of the Committee.

Many seamen resting in War Shipping Administration convalescence posts abroad have manned ships loaded with explosives, many more have travelled through sub-infested waters, and others are survivors of torpedoed merchant vessels, Dr. Hoguet explained. Tense from the memory of grim ocean-crossings, from the shock of combat or shipwreck, these men cannot sleep. Some become so restless and upset, they are unable to calm down during the daytime.

According to Dr. Hoguet, doses of mild sedatives, such as those contributed by the Committee, relax strained nerves and ensure a normal night's rest.

EPIDEMIC KERATOCONJUNCTIVITIS

K. C. WOLD, M.D.
Saint Paul, Minnesota

EPIDEMIC keratoconjunctivitis has existed under various forms and clinical entities for many years. The first recorded report was given by Von Stellwag in 1809 in which he describes a peculiar form of corneal inflammation following a mild conjunctivitis and in which macular opacities occurred. He called these lesions "nummular" because of their coin shape. Shortly after this, Fuchs describes a "superficial punctate keratities" in which several small round disclike opacities formed after an acute catarrhal conjunctivitis. Interest in this disease was revived by the occurrence in 1941 of an epidemic of acute inflammatory eye disease in the San Francisco Bay area. This epidemic was soon recognized as a clinical entity in the shipyards of this vicinity and other similar plants along the Pacific coast and was known as "shipward eye." It soon became a serious menace because of the loss of many hours from the work of building ships, and because of its spread to other industrial plants.

The symptoms of the disease among the workers varied a good deal both in their number and intensity. These symptoms somewhat in their order of appearance were as follows.

1. Conjunctivitis of the common catarrhal or follicular type in which burning, smarting, itching and an irritation as though a foreign body was present. Some patients complain of the eyelids sticking together in the morning.

2. Edema of the caruncle spreading to the mucous membrane of the lower lid and sometimes to the entire bulbar conjunctiva giving it a glassy appearance and occasionally presenting small subconjunctival hemorrhages. This edema may be limited to the corneo-scleral margin (limbus).

3. Edema of the lids and skin with drooping of the lower lid.

4. Intense hyperemia with lacrymation and occasionally a thin pseudo-membrane attached to the lower cul-de-sac.

5. No discharge and occasionally a scant secretion.

6. Dull pain in the eyeball affected, but a majority of cases suffer very little discomfort.

7. Involvement of pre-auricular lymph nodes which hypertrophy and are usually very sensitive. Occasionally the cervical and submaxillary glands are affected.

8. Appearance of punctate or disclike opacities in the cornea with blurring of vision.

The disease is usually monocular but about one fourth develop bilaterally. The intensity of the symptoms varies a good deal and all symptoms do not occur in each individual case. Corneal opacities may be very numerous, sometimes only a few, and they are usually located just beneath Bowman's membrane (anterior limiting membrane of the cornea) though they may even involve the posterior limiting or Descemet's membrane. An outstanding characteristic of the keratitis is lack of ulceration and vascularization. About 75 per cent of all cases develop keratitis and when it occurs, the vision is impaired for a period of three to six weeks. Later in the course of the disease when the cornea is more extensively involved, there is usually severe pain of a stabbing character, intense photophobia which seems to be out of proportion to the active inflammation and lastly a spasm of the orbicularis muscle in nature's attempt to protect the eyeball.

The etiology of epidemic keratoconjunctivitis is still somewhat obscure, but most experiments clinically and in the laboratory indicate that it is a virus disease.

It might be well at this point to define a virus as "a group of agents lying near or below the limits of resolution of the ordinary compound microscope which are usually able to pass filters retaining ordinary bacteria and which can be cultivated apart from the animal or plant body only in the presence of living cells." Viruses may also be considered as minute bacteria which have lost substance and enzyme systems in becoming obligate cell parasites, and are dependent on the metabolism of the host cell for all but certain highly specialized functions such as reproduction and production of toxin. Many of our common maladies of today such as head colds, certain types of pneumonia, anterior poliomyelitis, measles, and mumps are virus diseases. The only virus diseases primarily in the eye are trachoma

*Read at the annual meeting of the Minnesota State Medical Association, Minneapolis, Minnesota, May 18, 1943.

and epidemic keratoconjunctivitis; although, many forms of herpes, inclusion blenorrhea and measles have major ocular manifestations. Bacteriological examinations in keratoconjunctivitis have been essentially negative. The disease could not be reproduced in another host with any organisms found. Monocytes in large numbers are found in conjunctival scrapings. Filtered material from diseased tissue has caused positive reactions in other patients with development of typical symptoms of keratoconjunctivitis, and when injected into the cerebrum of Swiss mice produced, repeatedly, similar lesions throughout the brain but in no other organs of the body. Several investigators consider that a herpes virus is the etiological factor and that this disease is closely related to herpes zoster, dendritic keratitis and disciform keratitis. Other causes mentioned in the literature are allergy, nutritional disturbances, parasitic disease, injuries to the cornea or conjunctiva, and upper respiratory infections.

The progress of epidemic keratoconjunctivitis is fairly rapid and usually self-limited, terminating in macular opacities of the cornea. Full recovery of vision usually takes place but in a very few exceptions the maculæ persist in the pupillary area. Total loss of useful vision is a possibility. The prognosis, therefore, for eventual full recovery is very good. The main complication is a coalescence of these disclike spots or areas and possible fistulous openings through the anterior corneal surface.

Treatment of the disease is essentially symptomatic in the early stages and consists of hot or cold packs (whichever gives most relief) for ten minutes every two hours. Gentle, warm irrigations with boric acid or saline solutions are helpful. Atropine (1 per cent) and dionin (1 to 5 per cent) may be used as indicated. Bandaging the eye may be beneficial and causes no harm because there is little, if any, secretion present. Sulfathiazole ophthalmic ointment (5 per cent) should be used several times a day with special care that it is applied to the lid margins. A 4 or 5 per cent solution of sodium sulfathiazole sesquihydrate has been highly recommended. Silver nitrate may be applied to the palpebral conjunctiva, especially when granular. X-ray therapy given on three successive days shortens the period of convalescence and is considered excellent treatment. Due to the fact neither local nor general treatment has had much effect on the course and duration of the disease, recent investigations have been made with regard to the blood serum of recovered patients. This serum was found to contain a substance which will neutralize the virus in mice. It was also found that the recovered patients gradually built up a protective substance after the conjunctival phase of the disease has disappeared. Blood was drawn from these patients when this titer of neutralizing substance was highest and injected into a group of ten patients, nine of them showing striking clinical improvement soon after the injection. This group of cases was small and without controls, but the results were strikingly successful when it is considered that there is no direct ratio between the intensity of clinical symptoms and the duration of the disease.

The necessity of standard, accurately titered convalescent serum was emphasized. This method of treatment obviously would be difficult to carry out in private practise, but it suggests the possibility of a specific treatment. In the state of California, a ruling was recently made that it was an industrial disease and as such would be under the control of the State Industrial Accident Bureau. This should be a wonderful opportunity to check up on the convalescent serum treatment of keratoconjunctivitis. Proper attention to hygienic measures with regard to the patient and his surroundings as well as isolation in his work and treatment are very essential.

In our locality, allergic keratoconjunctivitis is the disease most likely to simulate epidemic keratoconjunctivitis. However, it has the following differential characteristics: (1) there is usually a definite history of sensitiveness to drugs, cosmetics and foods; (2) it is not epidemic; (3) conjunctival scrapings show eosinophils; (4) there is a tendency to recurrence when the patient is not properly desensitized.

Summary

Epidemic keratoconjunctivitis is a disease which assumes importance at this time because of its prevalence during the war period and in war production activity. It is caused by a specific virus and characterized by acute conjunctivitis, edema of the lids, hyperemia, no discharge, preauricular adenitis and formation of maculæ in the cornea. Symptomatic treatment gives relief, but the disease is essentially self-limited except for possible treatment with convalescent serum. Prog-

nosis is good unless impairment of vision persists due to opacities in the cornea.

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FOREIGN BODIES LODGED IN THE AIR OR FOOD PASSAGES

KENNETH A. PHELPS, M.D.

Minneapolis, Minnesota

FOREIGN bodies are accidently swallowed or inhaled very frequently. Most of them are coughed out at once or pass on through the intestinal tract and do not become lodged. The newspapers almost daily refer to some such accident and occasionally report the death of the victim before medical aid could be obtained. This publicity undoubtedly accounts for the fear and anxiety of patients and their relatives when a foreign body is aspirated. As a matter of fact, once the foreign body has become lodged, the patient is rarely in an emergency condition. Ill-advised attempts to remove the foreign body are more likely to cause disaster than the presence of the foreign body itself. Before the days of the x-ray and bronchoscope, statistics seemed to prove that a foreign body in the bronchus or esophagus had best be left alone, because more patients recovered when no attempt at removal was made.

Now, we expect foreign bodies to be safely and promptly removed. Because this is being done so successfully, we are losing our fear of mainipulations carried on within the trachea and bronchi. Obstetricians catheterize the newborn baby's trachea to aspirate secretion: the anesthetist inserts tubes to deliver his anesthetic intratracheally and he aspirates the bronchi quite routinely after prolonged anesthesia; the roentgenologist drops lipiodol into the bronchi; the chest physician and the chest surgeon are using the bronchoscope more and more frequently and possibly the intern or nurse may soon be doing routine bronchial aspirations. Rarely will any of these attempt the removal of a foreign body. They realize that the mechanical problems involved are more important than the mere passing of a bronchoscope. Quite certainly they should not attempt the removal of a foreign body from the esophagus because of the greatly increased hazard.

Esophagoscopy is much more dangerous than bronchoscopy because the esophagus, being a soft muscular tube, freely movable and with no constant lumen, is liable to perforation when a long rigid instrument is inserted.

The study of foreign bodies has contributed a great deal to our knowledge of the anatomy and pathology of the bronchi and lungs. It has been pointed out that each branch of the bronchus supplies ventilation and drainage to a definite segment of the lung. A generally accepted terminology is being worked out at present which will correlate the site of a bronchial lesion with the peripheral distribution of its effect.

We now recognize that lung disease produced by a foreign body is due to bronchial obstruction. The knowledge of the definite effects on the lung, produced by bronchial obstruction, has considerably influenced the diagnosis and treatment of pulmonary diseases.

From the accompanying table certain facts may be established. More foreign bodies occur in children than in adults. Foreign bodies are found in the air passages of children nearly ten times as frequently as in adults, while foreign bodies become lodged in the esophagus of adults more often than in children—about four to three.

Food eaten at meal time may contain a for-

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eign body, such as a bone. This type of foreign body is found almost exclusively in adults. They often masticate poorly, usually because of poor dentistry, and swallow hastily. Children's food This is of considerable diagnostic importance. It is rare for a foreign body to remain in the esophagus for years as may occur in the bronchi.

Of foreign bodies in the air passages about

ANALYSIS OF 567 FOREIGN BODIES

		Food					Metallic			
		Meal time			Not meal time					
Number of Cases		Bones	Meat	Others	Peanuts	Others	Safety pins	Coins	Dental	Others
Children										
Air way	206	2	0	0	91	63	11	2	1	36
Esophagus	141	6	5	1	0	2	34	50	0	43
Adults										
Air way	23	1	0	0	1	10	2	0	4	5
Esophagus	197	135	36	7	0	1	4	2	3	9

is carefully prepared and they are watched while eating. I have removed 179 such objects from adults and only fourteen from children. Only three of the entire group were in the air passages.

Nuts, seeds or other vegetable objects, not swallowed at meal time, occur almost entirely in children under two years of age. Of 168 such objects, 156 were in children and only three were in the esophagus. Ninety-one were peanuts. There is no specific reaction produced by peanuts. Any foreign body in this group may set up as violent a reaction.

Metallic objects, as coins or pins, are swallowed about ten times more frequently by children than adults. They become lodged in the esophagus about twice as often as in the bronchi. Youngsters pick up these things and put them in their mouths; adults do not.

A foreign body becomes lodged in the esophagus because it is large, has sharp points or serrated edges which catch in the folds of the esophagus or because the esophagus is narrowed as a result of preëxisting disease, such as spasm, stricture, or tumor. The symptoms are substernal discomfort, difficulty in swallowing or pain on attempting to do so. A scratch caused by a foreign body in passing, frequently results in pronounced dysphagia, but rarely persistent pain. 5 per cent lodge in the larynx, 10 per cent in the trachea, and 85 per cent in the bronchi.

One group of such foreign bodies originates from within the chest itself and are not aspirated. Mucous plugs occur in postoperative atelectasis, acute laryngo-tracheo-bronchitis or other infections and after the removal of foreign bodies. Diphtheritic membrane or blood from a pulmonary hemorrhage may obstruct. Ruptured peribronchial lymph nodes may contain broncholiths or granulation tissue. A tumor may slough and act as a foreign body.

Foreign bodies originating from outside the lung and aspirated include stomach contents, particularly during anesthesia or intoxication, and dental objects such as plates and dentures.

Small metallic objects such as straight pins do not cause obstruction of the bronchus. Quite often no symptoms are noticed and the object may remaain many years without the patient realizing it. I saw one patient, a seamstress, who had about twenty-five pins scattered through her bronchial tree. She was quite symptom free and the pins were discovered on routine chest x-ray. Eventually these objects may cause some local reaction which will obstruct the bronchus and produce symptoms such as bloody sputum and cough. A lung containing an unknown foreign body may not recover from an infection in the

usual manner. An x-ray is taken and the foreign body discovered.

Large foreign bodies will cause obstruction of varying degree. Sudden complete obstruction results in atelectasis. Complete occlusion of the trachea with bilateral atelectasis is fatal. If the main bronchus is obstructed, unilateral atelectasis results. The most common object causing this is a navy bean which swells rapidly and is the most dangerous of all foreign bodies. If the foreign body totally obstructs a secondary bronchus, one lobe of the lung may become atelectatic.

Partial obstruction is much more common than complete. It results in the well-known obstructive emphysema. Air can get into but not out of the lobe or lung and becomes trapped, due to the valve-like action of the foreign body. X-ray films taken at the end of expiration show that the obstructed part of the lung contains more air than the unobstructed portion, because the air cannot get out. This finding is positive proof of obstruction in the bronchus.

If bronchial obstruction persists, drowned lung, abscess, bronchiectasis or gangrene develop. True pneumonia is rare.

Symptoms.—By far the most constant symptoms are cough, wheeze, and dyspnea. The cough is often intermittent and noisy and changing position may increase it. The wheeze can be heard at the mouth and is both inspiratory and expiratory.

Any patient who chokes on a foreign body and then develops a cough and a wheeze, is almost certain to have the foreign body lodged in his air passages.

Dyspnea is an increase in the breathing effort. It may result in the ventilation of the lung being normal, increased or decreased. The clinical recognition of early anoxia is not possible, but when shallow and rapid breathing occurs, together with evidence of fatigue or exhaustion, it is time to do something in a hurry. Cyanosis, pain, hemoptysis, and other symptoms are less frequent.

Physical Signs.—The most constant sign is limited expansion of the affected lung. This is present even in the nonobstructing, symptomless, small foreign body deep in the lung.

Impaired breath sounds over the obstructed area is a most reliable sign and quite frequently present. The temperature, pulse and respiration are not diagnostic.

Diagnosis.—The history is invaluable and can be obtained in almost every case. The x-ray is also invaluable and often makes the diagnosis. When the history and symptoms are suggestive and the physical signs are confirmed by x-ray, bronchoscopy is always indicated. When the history is suggestive and no symptoms, signs nor x-ray findings are present a bronchscopy may be done, but it will usually be negative. Even bronchoscopy may not demonstrate a foreign body which is present. Foreign bodies of long standing may produce symptoms suggestive of almost every chest disease and should always be ruled out as a possibility.

Foreign bodies that have become lodged do not require emergency treatment, unless asphyxia is threatened. This may occur at once with immediate death. Usually the foreign body is aspirated into one bronchus and a period of relative comfort follows. Should it be dislodged and coughed into the trachea or glottis or fall back into the previously unobstructed bronchus both bronchi may be closed off. The foreign body itself may swell to such a size as to close off the trachea. A general rule is: remove all large foreign bodies and all organic ones immediately. Small metallic objects do not require emergency treatment. It is not advisable to wait for the foreign body to be coughed out as this occurs in only about 2 per cent of cases. Neither is it recommended that the patient be inverted as the foreign body may become impacted in the glottis.

Complications.—Perforation of the esophagus may result from a foreign body. The symptoms vary according to the level at which the perforation occurs. If in the neck, subcutaneous emphysema may be the only symptom or mediastinitis may develop. If lower down the pleural cavity may be directly involved, resulting in a pneumo-thorax, hydro-thorax or pyo-thorax. A tracheosophagal fistula may occur.

Case 1.—A man swallowed a fish bone. Several days later he developed a temperature, pain in his chest, a cough and some dyspnea. A diagnosis of mediastinitis was made by his internist and roentgenologist. The fish bone was removed from the middle portion of his esophagus. He went home against advice and did not

improve. Eventually he developed a mediastinal abscess which eroded his vertebræ and produced a total paralysis of his spinal cord. He died on the table as his mediastinum was being surgically explored. Hemorrhage may occur and be very alarming, even causing death.

Case 2.—A man about sixty-five years old swallowed a bone. Esophagoscopy was done elsewhere and hemorrhage occurred when the bone was grasped. He was then referred to me. I removed the bone and profuse hemorrhage occurred immediately. He stopped breathing but after a blood clot was removed from his trachea his respiration became normal and no further bleeding was noticed. He was kept in bed for two weeks without a recurrence of the hemorrhage and was sent home. He went to work and a fatal hemorrhage occurred.

Complications due to perforation of the air passages by foreign bodies may result in subcutaneous emphysema; pneumo-thorax, hydrothorax or pyo-thorax. Traumatic laryngitis in young children may occur, for which a tracheotomy may be required. A drowned lung or bronchiectasis is a most frequent sequella of a foreign body in a bronchus.

Mediastinitis demands prompt surgical treatment. The sulfa drugs have been a great help in this condition.

Technique.—In children a general anesthetic is always used. In no case have I seen any complications develop as a result of ether. I have seen cases where the lack of anesthesia caused the operator to traumatize his patient resulting in exhaustion and greater shock.

The occasional bronchoscopist is entitled to every advantage he can obtain. With his patient relaxed and under perfect control he can work much easier and more gently. It is bound to be more comfortable for a child to be asleep while a bronchoscopy is being performed. Contraindications to general anesthesia are cyanosis of marked degree and lung abscess or stricture of the esophagus when repeated treatments are necessary.

Local anesthesia in adults is quite satisfactory. The procedure is usually surprisingly comfortable for the patient. Plenty of preliminary sedation is helpful and in certain cases intravenous morphine is very satisfactory. Local applications of cocaine solution to the gums, pharynx, and larynx as well as instillation into the trachea is a routine. This is best done with the patient in the upright position. General anesthesia may be necessary and intravenous sodium pentathal is satisfactory, particularly if preliminary cocainization has been employed.

Frequently the bronchoscope can be passed directly into the trachea without using the laryngoscope to expose the glottis. A laryngoscope and a short forceps should always be handy to remove a foreign body if it should be stripped off at the glottis, as it is being extracted.

After the foreign body is removed a second examination should always be made to be sure that no fragment remains. A thorough aspiration of all pus and other secretions should be done at this time.

Good equipment is necessary, such as suction, batteries and lights. Elaborate technique is not needed nor are numerous instruments required.

A biplane fluoroscope is rarely essential, but when it is needed nothing can take its place.

The diagnosis is made earlier nowadays so neglected cases of long standing are seldom seen. This means complications and fatalities are becoming quite rare.

Case 3.—During the summer of 1942 the parents of D. S., aged seven, noticed that the boy appeared lazy. He would not do the things on the farm that he should do and was punished accordingly. Thinking that he might be sick he was taken to a doctor and a tonsillectomy was done. He made no improvement, was still listless, ate poorly and lost weight. Again he was taken to a doctor in another town and an x-ray of the chest was made because of a temperature and cough. This showed a metallic foreign body in the right bronchus. A bronchoscopy was done and a stricture of the right bronchus was seen, but no foreign body could be visualized. He was referred to me.

At bronchoscopy, with single plane fluoroscopic control, a forceps was passed through the stricture but the foreign body could not be grasped. The scope was removed and on the x-ray table the chest was percussed. Tympany was noted and on x-ray examination a collapsed lung was seen. Dr. Cohen was called and he used his pneumothorax machine in reverse and took out 800 c.c. of air from the chest. The lung expanded and remained so. Subcutaneous emphysema was present. The threatened mediastinitis was treated by large doses of sulfadiazine. His condition improved and in about two weeks from the original bronchoscopy a second one was carried out with biplane fluoroscopic aid. This time the forceps could be guided to the foreign body. It was grasped and pulled into the stricture of the bronchus. Here it was re-grasped and a successful extraction completed. His recovery was stormy but sulfadiazine again controlled his temperature and he left the hospital in good condition.

End Results.—There were seventeen deaths in my series of 567 cases. Nine were unavoidable. Three deaths were due to perforation of the esophagus and mediastinitis which occurred before the foreign body was removed.

Three deaths were due to bronchial foreign bodies before a bronchoscopy could be done.

Two deaths were from complications developing after a successful removal of the foreign body, one from the esophagus and one from the bronchus.

One death was from a foreign body which had been in a bronchus fourteen years and was impossible to remove. At post mortem it was found to be completely embedded.

In the other eight cases, death was due in three to the bronchoscopy itself. In five I was unable to remove the foreign body from the bronchus. These were among my first seventy cases.

Conclusions

Foreign bodies are frequently swallowed but few become lodged. Once they become lodged the emergency is over and time can be taken to effect a safe removal.

Esophagoscopy is more dangerous and difficult than bronchoscopy.

Foreign bodies occur more frequently in children and more often in the air passages.

Foreign bodies occur less frequently in adults and usually in the food passage.

Foreign bodies causing obstruction produce symptoms.

General anesthesia should be used in all children.

Local anesthesia should be used in all adults.

RECURRENT VENOUS THROMBOSIS: AN EARLY COMPLICATION OF OBSCURE VISCERAL CARCINOMA

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IN 1906 Haward reviewed the incidence of fatal venous thrombosis in 2,903 consecutive necropsies and found that carcinoma was second only to infections of the middle ear as the predisposing factor. In Barker's analysis of 166 cases in which peripheral thrombophlebitis complicated infectious and systemic diseases, carcinoma was the most frequently associated condition. After the study of 4,258 consecutive necropsies, Sproul reported that carcinoma of visceral organs was the most common cause of apparently idiopathic thrombosis of the veins of the neck, abdomen, pelvis and extremities.

The following quotation is from the lectures of Amand Trousseau delivered in 1862:

"When you are undecided about the nature of a disease of the stomach, when you hesitate between a chronic gastritis, a simple ulcer, and a carcinoma, a phlegmasia alba dolens occurring in the leg or arm will put an end to your indecision and you will be able to assert positively that a carcinoma is present. I have shown you analagous cases in my wards and I have asked you to notice that this obliterative phlebitis did not pertain exclusively to carcinoma of the stomach and that it might occur with cancer affecting any internal organ whatever."

Trousseau's observation was adequately confirmed, particularly by clinicians of the British Isles,[3,4,6] but in recent decades it appears to have been ignored for the most part. Constant improvement in the laboratory and roentgenologic methods for the early diagnosis of visceral carcinoma may account for this. However, it is worthy of emphasis that the spontaneous development of thromboses in the peripheral veins may be a definite presumptive sign of the presence of obscure visceral carcinoma. This phenomenon may occur at a stage too early for the detection of the neoplasm by most modern devices. Although the incidence of venous thrombosis increases with advancing cachexia from any cause, it appears that

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in visceral carcinoma such thrombosis in distant vessels may antedate any definite sign or symptom of the malignant neoplasm. The following cases illustrate the occurrence of this sequence of events.

Report of Cases

Case 1.—A married Jewess, aged sixty-six, registered at the Mayo Clinic, January 28, 1942. She complained of recurrently "inflamed veins" in the superficial tissues of one or both lower extremities. The symptoms had been present four months. She had been semi-ambulatory since the onset of the difficulty. The symptoms had subsided when the patient had rested in bed but they had recurred when she had attempted to resume her usual activities. Her temperature had been elevated occasionally (maximum 100.8°F.) but she had not had any chills. She had had slight orthostatic edema of the feet and ankles.

Careful examination, including roentgenographic study of the gastro-intestinal tract, had revealed only an asymptomatic "staghorn" renal calculus on the right side. There had been occasional microscopic pyuria.

The patient had no other spontaneous symptoms, but, on questioning, she stated that during the preceding six months itchy, scaly, hyperpigmented areas had developed and persisted in the axillary, antecubital and vulval regions and that more recently she had been bothered by soreness of the lips and mouth. Her son, a qualified dermatologist, had felt that the lesions were those of acanthosis nigricans. In addition, the patient stated that she had lost approximately 20 pounds (9.1 kg.) during the two months prior to her registration at the clinic. For a similar period, anorexia had been present, but the patient had no other symptoms referable to the gastro-intestinal system.

Examination revealed moderate obesity but evidence of loss of weight. The arterial pressure was 130 mm. of mercury, systolic, 80 mm. diastolic. The temperature was 99° F., the pulse rate 88, and the respiratory rate 20. Examination of the skin revealed lesions typical of acanthosis nigricans. There was a mild degree of cheilitis and the buccal mucosa was moderately swollen and erythematous. Examination of the heart, lungs and abdomen gave negative results. The left greater saphenous vein and some smaller tributaries in the region of the right ankle were thrombosed, cord-like and tender. There was no perceptible edema. A single indurated nodule, measuring 1x1.5x1 cm. was palpable in the left supraclavicular fossa.

Since the patient was dismissed within twenty-four hours of the time of her admission, laboratory studies were incomplete. Urinalysis revealed moderate albuminuria and approximately seven leukocytes in each microscopic field as viewed with the high power objective. No bacteria were found in the urinary sediment stained by Gram's method. Erythrocytes numbered 3,490,000 and leukocytes 7,200, per cubic millimeter of blood respectively. The blood contained 11.2 gm. of hemoglobin and 42 mg. of urea per 100 c.c. The sedimentation rate of the erythrocytes was 27 mm. within an hour. The Kline reaction of the serum was negative. The heart and lungs appeared normal roentgenographically. A large "staghorn" calculus was visualized in the region of the right kidney. Roentgenologic examination of the stomach was attempted but with unsatisfactory results and could not be repeated because of the patient's departure.

As it was felt that the evidence accumulated from the physical examination indicated the probable presence of metastatic carcinoma, the patient's relatives were advised that biopsy of the nodule in the left supraclavicular space would clarify the diagnosis. This was done following her return home and the tissue was sent to us. Microscopic study disclosed that it was a lymph node infiltrated with adenocarcinoma grade 3. The site of the primary lesion was undetermined.

Comment on Case 1.—In this instance, at the time the patient appeared at the clinic, ample evidence of the presence of carcinoma was available on physical examination alone. It is interesting that the first subjective indication of trouble was the development of "inflamed veins." The rather frequent association of acanthosis nigricans and intra-abdominal carcinoma had led her son to advise extensive periodic examinations, none of which had established a cause for concern until the development of peripheral thrombophlebitis. The enlarged left supraclavicular lymph node was a late development.

Case 2.—A man, thirty-seven years of age, registered at the clinic July 9, 1934. He complained of pain, which had been present in the upper part of the abdomen for two months and had been associated with aching and soreness in the calves of the legs for a month before the patient came to the clinic.

In the beginning, the abdominal distress had consisted essentially of a feeling of epigastric fulness, had appeared chiefly after the patient had retired each evening and had persisted for one to two hours. For a month before he came to the clinic, the abdominal distress had occurred throughout the day and night, had been sharper in character and sometimes had extended from the upper part of the abdomen to the nipple regions bilaterally. There had been no acute paroxysms of pain, and the patient had no other symptoms. For one month the patient also had been bothered by intermittent aching and soreness in the calves of the legs. Four days before he registered at the clinic, a tender red cord had appeared on the medial surface of the right leg. At no time had there been fever, chills or edema.

On examination, the patient's general appearance was good although he felt he had lost approximately 15 pounds (6.8 kg.) since the onset of his illness. The oral temperature was 98.8° F., the pulse rate 86, and the respiratory rate 18. The arterial pressure was 148 mm. of mercury systolic and 90 mm. diastolic. Examination of the heart, lungs and abdomen gave negative results.

One examiner, however, felt that he was able to palpate an indefinite mass deep in the left epigastrium. All phases of thrombophlebitis were present in the superficial veins of the lower extremities. On the medial surface of the right calf, a 6 cm. segment of the greater saphenous vein was acutely inflamed. There was no edema. The arterial pulsations were normal.

The blood contained 4,430,000 erythrocytes and 9,500 leukocytes per cubic millimeter. Of the leukocytes, 18.5 per cent were lymphocytes, 11 per cent monocytes, and 70.5 per cent polymorphonuclear neutrophils. Urinalysis gave normal results. The Kline reaction of the serum was negative. Roentgenographic examination of the thorax, stomach, gallbladder and colon also gave negative results. The results of complete urologic examination, including cystoscopy and retrograde urography, were considered normal. Analysis of the gastric contents after a test meal showed a value of 17 for the combined acidity, according to the method of Töpfer, but no free hydrochloric acid was present. The blood platelets numbered 250,000 per cubic millimeter of blood. The bromsulfalein test of liver function revealed grade 2 (on the basis of 1 to 4) retention of the dye. The value for serum bilirubin was 1.2 mg. per 100 c.c.

On July 7, 1934, the actively inflamed segment of the right saphenous vein was resected. Microscopic examination of the vessel revealed complete thrombosis with very little organization. There was a minimal inflammatory reaction in the medial and adventitial coats of the vein.

On July 25, 1934, an episode of hematuria occurred. This was thought to be the result of renal infarction secondary to venous thrombosis.

On August 3, 1934, all evidence of active phlebitis had disappeared and an exploratory laparotomy was performed. A nodular mass was found retroperitoneally in the left upper quadrant of the abdomen. Multiple nodules were present on the surface of the liver. Biopsy of one of these revealed the presence of adenocarcinoma, grade 4. It was thought that the malignant lesion had arisen from the pancreas. Surgical removal was impossible. The postoperative course was uneventful. The patient was dismissed August 14, 1934, and died at his home, September 6, 1934.

Comment on Case 2.—The development of "idiopathic" thrombophlebitis suggested the true nature of this patient's illness, whereas extensive study otherwise had failed. Biopsy of the involved veins showed a relatively bland thrombosis with only minimal organization and phlebitis, a picture distinctly different from true idiopathic recurrent thrombophlebitis (thrombophlebitis migrans).

Case 3.—A man, aged fifty-eight years, had been quite well until December 18, 1940, when unexplained painful swelling of the left calf had appeared. During the next three months repeated episodes of thrombophlebitis had occurred. These had involved in rapid succession the superficial veins of both lower extremities and the right basilar, axillary and subclavian veins. During this period, a solution of heparin had been administered, continuously, intravenously for ten days or more on two occasions. During these periods no thrombosis had developed but it had recurred when the administration of heparin was discontinued. He had had two episodes of severe pain in the thorax which had been thought to be due to pulmonary infarction.

He was admitted to the hospital on March 1, 1941. At that time he had no symptoms other than those previously mentioned. The temperature, and the pulse and respiratory rates were normal. The arterial pressure was 134 mm. of mercury systolic and 88 mm. diastolic. He was found to have marked dental infection. Râles were heard over the right side of the thorax posteriorly. The heart was normal on physical examination, as was the abdomen. Both lower extremities and the scrotum were edematous and slightly cyanotic. There was also a moderate degree of edema of the right side of the abdominal wall. Large collateral veins were visible in both legs and in the right anterior wall of the thorax. The right axillary vein was palpably thrombosed but there was no tenderness over the vein.

The blood contained 3,740,000 erythrocytes and 7,300 leukocytes per cubic millimeter. The results of urinalysis were normal. The sedimentation rate of the erythrocytes was 35 mm. within an hour. Roentgenologic examination of the thorax revealed a diffuse increase in density within the right lower lobe, which was interpreted as the result of the residuum of a pulmonary infarct. The Kline reaction of the serum was negative.

A solution of heparin again was administered intravenously at irregular intervals during the next two months. The course of the illness during this period was extremely stormy and was punctuated by two episodes of pain in the thorax, cough and hemoptosis. These attacks occurred when the administration of heparin had been discontinued temporarily. They were thought to be the result of pulmonary infarction after pulmonary embolism. The patient also had an episode of hemiplegia with aphasia; later, convulsions occurred. The latter ceased and the hemiplegia gradually disappeared. He gradually improved and was dismissed May 23, 1941, with no evidence of active thrombophlebitis or other symptoms.

On September 16, 1941, he returned to the clinic for reëxamination. At that time, he said that there had been no further symptoms of thrombophlebitis and that he felt well and was gaining weight. On examination, fulness in the right supraclavicular and axillary spaces was noted and prominent veins were present bilaterally on the anterior wall of the thorax and on both upper extremities. The percussion note was dull and breath sounds were diminished over the posterior portion of the lower lobe of the right lung. The blood contained 4,400,000 erythrocytes and 9,900 leukocytes per cubic millimeter. Examination of the urine did not reveal any abnormality. The sedimentation rate of the erythrocytes was 35 mm. in an hour. The value for the hemoglobin was 12.7 gm. per 100 c.c. One roentgenographic examination of the thorax a circumscribed area of density was

observed above the right hilus. The patient was dismissed. It was felt that the thoracic lesion was a residuum of an infarction.

He resumed his usual activities and regarded himself as quite well until April of 1942. After an infection of the upper part of the respiratory tract, edema of the face, fulness of the right supraclavicular space, fever and persistent non-productive cough developed.

Examination at the clinic April 12, 1942, revealed the picture of the obstruction of the superior vena cava. His face was diffusely swollen. The veins of the anterior wall of the thorax and of the upper extremities were quite prominent and a thrombosed vein was palpable in the left supraclavicular fossa. Breath sounds were suppressed over the posterior portion of the right side of the thorax. The leukocytes numbered 10,300 per cubic millimeters of blood. On roentgenologic examination, the superior mediastinum was rather markedly widened, with some infiltration of the right hilar region. After treatment with anticoagulants, heparin and dicumarol, his condition improved and he returned home.

On June 20, 1942, he died at home after cough with blood-stained sputum and extreme dyspnea had developed. At necropsy, a large, apparently bronchogenic, carcinoma was found occupying the superior mediastinum and almost completely occluding the superior vena cava and right main bronchus.

Comment on Case 3.—The correct diagnosis was not made in this case until very late. The first symptom was thrombophlebitis in a vein of the calf. This appeared eighteen months before death, and was followed by repeated widespread thrombosis elsewhere. The thrombotic phenomena occupied the center of the clinical picture until shortly before death. Although venous obstruction by the intrathoracic tumor may have been a factor in the production of the peripheral venous thrombosis, it would seem unlikely that it was large enough to produce venous obstruction during the first episode, considering the long period of survival and complete freedom from symptoms during a large part of the course of the illness. This case also illustrates the difficulty which may be experienced in establishing a diagnosis of primary pulmonary carcinoma in the presence of pulmonary infarction.

Case 4.—A married woman, sixty-two years of age, was seen at the clinic in 1924. Her symptoms from that time until 1932 had been attributable to moderately severe hypertrophic changes in the spinal column, achlorhydria and the presence of a poorly functioning gallbladder containing multiple stones. She had never thought her gastro-intestinal difficulties disabling enough to warrant surgical intervention.

In July, 1933, tonsillectomy was performed in an effort to relieve some of the distress resulting from the arthritic changes in the spinal column. At about this time, polydipsia and polyuria developed. They became slowly worse and she was admitted to the hospital September 11, 1933. Aside from these symptoms, the patient complained only of occasional postprandial distress, such as epigastric fulness, nausea and vomiting, which were particularly bothersome after the ingestion of meals rich in fats. This trouble, however, seemed no worse than previously and she had had no acute pain for at least one year.

On examination the patient appeared dehydrated. She was moderately obese. The skin and mucous membranes were "parched." She stated that she had lost approximately 20 pounds (9.1 kg.) since the onset of polydipsia and polyuria. The temperature was 97.4° F., the pulse rate 100 and respiratory rate 18. The arterial blood pressure was 144 mm. of mercury systolic and 82 mm. diastolic. The heart and lungs were normal on physical examination. There was moderate tenderness to deep pressure in the right upper quadrant of the abdomen. The results of examination of the pelvis and rectum were normal. A few small varicose veins of the leg were observed.

A diagnosis of diabetes insipidus was made. The daily output of urine ranged as high as 7,500 c.c. before treatment with pituitary preparations was instituted. The specific gravity of the urine was always less than 1.010, and the urine did not contain any sugar.

Only fair results were obtained in controlling the polyuria and polydipsia with various pituitary preparations. In addition the patient complained rather frequently of nausea and vomiting. She was dismissed to continue treatment of the diabetes insipidus as an outpatient and to reconsider surgical removal of the gallbladder should her condition permit.

She was readmitted to the hospital October 7, 1933, because of severe pain in the lower part of the left side of the thorax, which was aggravated by deep breathing or coughing. She was flushed and appeared acutely ill. The temperature was 101° F., the pulse rate 112, and the respiratory rate 20. The arterial pressure was 118 mm. of mercury systolic and 88 mm. diastolic. The physical findings were the same as they had been previously. No friction rub was heard.

The blood contained 4,720,000 erythrocytes and 17,900 leukocytes per cubic millimeter. The results of urinalysis were negative. When she was admitted to the hospital, the specific gravity of the urine was 1.013. Roentgenologic examination of the thorax revealed infiltration at the base of the left lung which was consistent with the picture of pulmonary infarction. On subsequent investigation, all blood cultures were negative, as were specific agglutination reactions. Examination of the sputum revealed no acid-fast bacilli or pathogenic cocci. The bromsulphalein test for liver function disclosed retention of the dye grade 2 (on a basis of 1 to 4). The electrocardiogram showed a diphasic T wave in lead 2 and inverted T wave in lead 3. A diagnosis of pulmonary infarction was made. Superficial thrombophlebitis developed in the right leg eight days after her admission to the hospital; this progressed and involved the entire length of the right greater saphenous. The involved vein was not tender.

On October 26, 1933, signs and symptoms of fresh pulmonary infarction developed. There was little or no change in the roentgenogram. Evidence of activity of the thrombophlebitis in the right lower extremity gradually subsided, but on December 12, the same process appeared in the left greater saphenous vein.

During the last two months of life, although the diabetes insipidus was fairly well controlled with pituitary preparations, the condition of the patient failed progressively. Her major symptoms consisted of nausea with occasional vomiting. There was no severe abdominal discomfort. Two weeks before her death, diffuse pitting edema of the lower extremities developed.

Necropsy was limited to the abdomen. She was found to have had a carcinoma of the gallbladder with metastasis to the regional lymph nodes, colon, common bile duct, suprarenal glands, kidneys, liver and body of the pancreas. The gallbladder was distended with 250 c.c. of cloudy bile and contained five mulberry stones. Organized or partially organized thrombi filled the lumens of the vena cava and the iliac and portal veins.

Comment on Case 4.—This case represents the more commonly recognized development of venous thrombosis with advancing cachexia. However, even in this instance the thrombosis should have served as an indication that there was a strong possibility of a visceral carcinoma.

General Comment

The factors usually held responsible for the development of venous thrombosis are alteration in the structure of the walls of the involved veins, circulatory stasis and alteration in the concentration of various constituents of the blood which lead to an increase in its tendency to coagulate.

Clinically, lesions of superficial thrombophlebitis associated with carcinoma are characterized by thrombosis of the vein with relatively little evidence of inflammatory reaction. Thus they can usually be distinguished from the lesions of recurrent idiopathic thrombophlebitis (thrombophlebitis migrans), and from those of superficial thrombophlebitis which occurs in thrombo-angiitis obliterans. The histologic picture also is quite different, and if there is doubt about the pathologic process in the vein, a biopsy will permit a definite differentiation. The histologic picture of recurrent idiopathic thrombophlebitis reveals a marked cellular organization of the thrombus with much fibroblastic proliferation and usually some giant cells. The media and adventitia are heavily infiltrated with lymphocytes and fibroblasts. In contradistinction, the histologic picture of thrombophlebitis associated with carcinoma reveals relatively few fibroblastic cells in the thrombus and only a minimal degree of inflammatory reaction in the medial and adventitial coats of the vein.

In the cases which we have reported here, the influence of mechanical factors cannot be absolutely excluded. However, detailed postmortem examination in many reported cases would indicate that venous thrombi may form in the absence of circulatory stasis or neoplastic obstructive invasion of the walls of veins. In a postmortem study of 200 cases of carcinoma of the kidney, Sproul found that the renal vein or vena cava was involved in 22.5 per cent of the cases; however, multiple or distant thrombosis had not developed in any of these cases. Sproul also reported that thrombosis was present in nine, or 56.2 per cent, of sixteen cases of carcinoma of the body or tail of the pancreas. In five, or 31.3 per cent, of the sixteen cases, thrombosed vessels were observed in various parts of the body. Widespread metastasis had occurred in only one of the sixteen cases. In cases of carcinoma of the pancreas it would seem difficult to explain the development of distant thrombosis on the basis of mechanical obstruction or invasion of the vessels alone. It seems reasonable to assume that some change in the coagulability of the blood must occur in many of these cases.

On the basis of data available at present, it is only possible to speculate as to the nature of these changes. The methods ordinarily employed for determining the coagulability of the blood have failed to demonstrate any consistent change in the reported cases. It is unfortunate that, while many procedures are available for measuring a decrease in the coagulability of the blood, there is none which provides a reliable index of an increased tendency to coagulation.

Trousseau felt that the increased tendency to thrombus formation was a characteristic of carcinoma in general and was not dependent on the involvement of any particular organ. The extensive study of Sproul, however, indicated that multiple thrombi are more prone to develop in association with carcinoma of the body or tail of the pancreas than they are in cases of carcinoma of other organs.

In the second of the four cases that we have reported in this paper, the carcinoma probably involved the pancreas and in case 1 the same organ was suspected by the process of exclusion. Metastatic carcinoma of the pancreas was present in Case 4. Sproul also noted a marked reduction

in the thrombosing tendency in the presence of jaundice. He suggested that alteration in the amount of pancreatic secretion, change in the amount of absorption of vitamin K, and other factors resulting from disturbed function of the upper part of the gastro-intestinal tract might indirectly influence the coagulability of the blood.

In cases of this type, further study of the constituents of the blood, with particular emphasis on the prothrombin factor, may elucidate the problem.

Conclusions

1. Visceral carcinoma is often the predisposing factor in the development of multiple, and sometimes distant, venous thrombosis. This seems particularly true in cases in which the neoplasm arises from or involves the body or tail of the pancreas.

2. In the absence of other obvious causative factors, the development of apparently spontaneous peripheral thrombophlebitis in a case in which the patient is fifty years or more of age, should suggest a careful search for visceral carcinoma.

3. The formation of a thrombus in many of these instances would appear to be the result of more than simple mechanical obstruction, circulatory stasis, or alteration in the structure of the vessel wall. Further study of the factors influencing the coagulation of the blood would seem indicated.

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HEMORRHAGE IN PULMONARY TUBERCULOSIS

Pulmonary hemorrhage is one of the most distressing phenomena encountered in medical practice. The patient is gravely alarmed and the physician is confronted by bleeding that comes from a point deep within a delicate organ enclosed in a rigid framework. To combat the bleeding there may be only slowly or doubtfully effective physiological mechanisms.

Psychological effects to one side, hemoptysis generally is indicative of serious pulmonary disease. It is recognized that unexplained blood-spitting must be considered due to tuberculosis until proved otherwise. However, occasional causes include such nontuberculous diseases as bronchiectasis, bronchogenic carcinoma, lung abscess, rheumatic heart disease and various minor nose and throat affections. People apparently in good health and presenting negative physical signs and few or equivocal roentgen findings represent especially puzzling problems when they report having coughed up blood.

Among 1,000 patients consecutively discharged from the Blue Ridge Sanatorium, Charlottesville, Virginia, only those were included in this study who gave a clear-cut history of spitting up one dram or more of blood, or who suffered a hemorrhage during their stay in the institution. "Streaking," "streaked sputum" and indefinite history of hemoptysis were excluded. In all, 905 cases of tuberculosis, made up of 424 males and 481 females, included 220 who had hemoptyses during the active phase of the disease. This is an incidence of 24.3 per cent, regardless of the duration of observation.

Some of the largest hemorrhages in this series occurred in a few patients showing bronchiectasis or rheumatic heart disease. Bogen, including instances of streaks and clots, found that over half of his hemoptysis cases expectorated less than two ounces of blood. The present study records 106 hemorrhages of stated amount, ranging from one dram to two quarts, the average being five ounces. This did not include repeated bleeding from the same individual on the same or subsequent days, since these were not felt to be distinct episodes, but more or less a continuation of the first. In approximately 40 per cent of the cases the episode of hemoptysis was repeated at least once.

Hemorrhage was the presenting symptom, often the initial evidence of trouble, in 60 cases. Perhaps nothing drives a patient to seek medical advice faster than the expectoration of a single mouthful of blood, although twenty-three patients did nothing about their initial hemorrhage.

When the local physician was consulted by persons with hemorrhage in cases of previously undiagnosed tuberculosis 70 per cent were properly diagnosed, though it is estimated that 84 per cent correct diagnoses could have been reached by further study.

Only forty-nine cases in the entire hemoptysis group failed to show a cavity on x-ray examination and of these 11 were found to be nontuberculous. No less than 83.4 per cent of the tuberculous cases with hemorrhage had a positive sputum! Of the 170 patients in this latter category, 159 had roentgenograms revealing consolidation, honey-combing, punching out or frank cavitation.

Correlation of hemoptysis with physical exertion, with direct chest trauma or with mechanical disturbance of the lung is possible in some cases, though hemorrhage may and often does appear when the patient is at rest, perhaps during sleep. In only twenty-eight cases in this study was there either a specific history of a precipitating factor or of its absence. In ten patients hemorrhage was related to one or more menstrual periods.

Among the graver consequences of pulmonary hemorrhage must be listed strangling and asphyxia from massive bleeding, fatal blood loss in the cachectic patient, and the commoner and ever-present danger that blood from a cavity which is generating a positive sputum will spread the infection to other parts of the lungs, giving rise to an acute tuberculous bronchopneumonia or a massive caseous pneumonia. Obviously, repeated episodes of blood-spitting multiply the chances for such complications to occur.—*George R. Minor, M.D., American Review of Tuberculosis, August, 1943.*

HISTORY OF MEDICINE IN DODGE COUNTY

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and

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(Continued from December issue)

Dr. Frederick L. Riser (1858-1939) is mentioned[300] as having been in Kasson as early as 1877, as previously stated, but in 1877 he did not have the degree of Doctor of Medicine. He was never licensed to practice medicine in Minnesota.[40] Doctor Riser opened an office at Kasson in April of 1883,[117] but closed it and left Dodge County in August of the same year.[118]

Doctor Riser was born in Lansing, Iowa, on July 9, 1858, the son of Frederick Riser and Barbara Marti Riser.[246] Both his parents were born in Switzerland. The details of his early life are unknown, but on March 6, 1884, after he had left Dodge County, he was graduated from the old Homeopathic Medical College of Missouri at Saint Louis.[264] He was licensed to practice medicine in Iowa on December 26, 1886, and at the time he was living in his birthplace, Lansing.[264] He later removed to Nebraska, where he was licensed to practice medicine on September 24, 1891, receiving License No. 815.[285] He apparently practiced in both Lancaster County and Box Butte County in that state.[252] In 1906 he was living in McQueen, Arkansas. He was licensed to practice medicine in Colorado on April 5, 1910, and at the time he was living in Henderson.[246] He died in the Colorado General Hospital at Denver on April 28, 1939, of diabetes mellitus with gangrene.[301]

Dr. Osmon Franklin Way (1858-1936) was born on June 16, 1858, on a farm three miles north of Claremont in Dodge County, the son of Edwin F. Way and Ann Augusta Stevens Way.[302] His father was a farmer and merchant, a major in the War of the Rebellion, member of the Minnesota Legislature, and a probate judge and justice of the peace for many years in the county. Both Doctor Way's parents were natives of New Hampshire; his father had been born in Lempster and his mother in Charleston. The young man attended the local public schools, and was sent first to the Shattuck Military Academy at Faribault and then to the Owatonna High School. While he was in Owatonna he became acquainted with the veteran eclectic physician, Dr. Eli Martin Morehouse (1835-1891), first president of the old Minnesota State Eclectic Medical Society.[25] Doctor Morehouse was for some time the preceptor of Doctor Way, who taught school for a while and then in 1880 enrolled for the fall and winter terms at the State University of Iowa College of Medicine at Iowa City,[303] from which, however, he was not graduated. He was licensed to practice medicine in Minnesota on December 31, 1883, receiving License No. 591.[40] Prior to that time he had practiced for a while in Blooming Prairie in Steele

County, but in September of 1883, as previously stated, he settled in Claremont, where he opened a small drug store in conjunction with his medical practice.[119] He later became a registered pharmacist, but never forsook the practice of his profession. In January of 1884 he filed his certificate of licensure at the court house in Mantorville,[304] according to the stipulations of the medical practice act of 1883.[95] The young man had scarcely begun the practice of medicine when he encountered a patient in such a desperate plight that he had to call in his friend, Dr. Theodore L. Hatch (1848-1913) of Owatonna, a well-known eclectic practitioner.[54] This was on October 30, 1885, and the case itself was reported in 1886 by Doctor Hatch[305] to the old *Northwestern Lancet* of Saint Paul.

In February of 1891 Doctor Way went to the old Kentucky School of Medicine in Louisville.[306] He was graduated from this college with the degree of Doctor of Medicine on June 19, 1891.[307]

Doctor Way was keenly interested in physical medicine all his life. He studied that branch of medicine assiduously, and installed the first static machine to be used in Dodge County. He contributed somewhat to the medical literature, and was in the habit of delivering addresses at meetings of the Southern Minnesota Medical Association. Some of these papers were printed.[308,309] In 1910 he was elected president of the Southern Minnesota Medical Association. In Claremont Doctor Way was superintendent of the Sunday school and a member of the board of trustees of the Methodist Episcopal Church, health officer of the village most of the time, member of the village board of education for many years, and president of the local bank. He was a member of the Masonic fraternity, Modern Woodmen of America, and the United Workmen. He died of cerebral hemorrhage and arteriosclerosis at Claremont on February 21, 1936.[310] He was buried in Claremont.[307]

Dr. William H. Parker (1859-1913) was a partner of Dr. James A. Garver (1814-1901) at Dodge Center from 1884 to 1887, as has been said. He was born at Delhi, Delaware County, Iowa, on October 23, 1859, the youngest son of Samuel F. Parker and Mary J. Caswell Parker.[311] In the year of his birth his parents moved to Earlville, Iowa, and the boy was reared in that town, where he attended the public schools of the community. At the age of sixteen years he enrolled in a Methodist Episcopal seminary at Epworth, Iowa, and shortly thereafter he studied at Upper Iowa University at Fayette, Iowa. Then he attended the State University of Iowa College of Medicine at Iowa City, where during his first year he studied medicine with a preceptor. He was married to Miss Ida M. Rundell of Earlville on March 17, 1881.[311] Doctor Parker was graduated from this university on March 7, 1883, and he settled in practice at Fairmont, Minnesota.[120] He was licensed to practice medicine in Minnesota on January 21, 1884,[40] and on May 15, 1884, he became the partner of Doctor Garver at Dodge Center.[120] He left Dodge Center in 1887. Where he went it is not known, but in 1895 he was back in Earlville, Iowa. On January 10, 1895, he was licensed to practice medicine in Iowa.[264] Doctor Parker is known to have practiced medicine in Masonville, Iowa, for nineteen years,[312] but the dates of his tenure there cannot be learned at this time. In about 1898 Doctor Parker became a victim of pulmonary tuberculosis, and some years later he was afflicted by a nervous disturbance of some type. He died in the Minneapolis City Hospital on June 12, 1913.[312,313]

Dr. Charles W. Coleman (1855-1925) was born at Columbia City, Indiana, according to his son,[314] on November 13, 1855. He was the son of Alexander

Coleman, a native of Pennsylvania, and Anna Nelson Coleman, a native of Ohio. His parents moved to Milton Township in Dodge County when Doctor Coleman was a boy, and they settled on a farm. Young Coleman was reared in Dodge County, and attended the old State University of Iowa Department of Homœopathic Medicine at Iowa City. He was at that institution in 1882, but the State University of Iowa has no evidence that he was ever graduated with the degree of Doctor of Medicine.[129] At some time after 1882 (1885?) Doctor Coleman returned to Dodge County to practice medicine, and he was licensed in Minnesota by affidavit in 1887.[40] In 1886 it was reported[124] that Doctor Coleman had traded some land he owned in Kansas to Dr. Horace P. Porter (1839-1912) for a stock of drugs. This was in April of 1886. About a year later it was noted in a Hayfield item in the *Dodge County Republican*[315] that "Dr. Coleman reports considerable sickness," so it may be presumed that at the time he was practicing medicine. In May of 1888 it was said[316] that he had attended a medical convention in Saint Paul. The convention probably was the twenty-second annual session of the Minnesota State Homœopathic Institute at the Nicollet House in Minneapolis on May 15 and 16 of that year, since the Minnesota State Medical Society did not convene until June of that year. Doctor Coleman was not, so far as the authors are aware, a member of either organization.

Doctor Coleman, according to Giere,[153] was the first physician in Hayfield. He was also the postmaster in that village. He resigned the position in 1894[317] to move to the farm in Milton Township which he had inherited from his father. In 1900 it was noted[318] that he had rented his farm to a tenant and that he proposed to go to North Dakota, but in 1904 he was in Pine Island, where he operated a real estate and insurance business. He stayed in Pine Island for eight or ten years, and then went to International Falls. In 1918 he was in Douglas County, Oregon. He was never licensed to practice medicine in that state.[193] Later he removed to Billings, Montana, where he died in Saint Vincent's Hospital on November 1, 1925, at the age of seventy years.[319] He was never licensed to practice medicine in Montana,[320] and it is believed that he never practiced medicine after he left Hayfield in 1894.

Dr. John Connell McMartin (1863-1890) was born in Ripley Township, Dodge County, Minnesota, on June 4, 1863, the son of Peter McMartin and Jane Connell McMartin.[321] His father was a native of Canada who had come to Dodge County in 1858, where he purchased a farm in Ripley Township.[322] His mother was a native of Scotland.[322] Doctor McMartin's mother died in about 1865, and the boy was reared by an aunt and uncle, who likewise owned a farm. Doctor McMartin's brother[321] said that the lad had had a desire to become a physician ever since he was a small boy, and while Doctor McMartin attended the Mantorville High School he studied medicine to some extent with Dr. John Flood (1850-1918) of that town. He was graduated from the Mantorville High School in 1884, and in July of that year the *Dodge County Republican*[323] observed:

> John McMartin, once one of the Claremont boys, passed his examination creditably at Mantorville, last Friday. He talks of studying medicine with Dr. F. K. [*sic*] Woodard, of Minneapolis, who formerly had a good practice in our village [Claremont.]

Doctor McMartin did go to Minneapolis, where he studied medicine both with Doctor Woodard and at the old Minnesota College Hospital. His professional card appeared in the *Dodge County Republican* for January 1, 1885,[130]

and it was disclosed that he had an office over Hunt's drug store in Dodge Center. At the time he was neither a physician nor licensed to practice medicine in Minnesota.

In fact, in the *Dodge County Republican* of March 19, 1885, the following paragraph was printed among the Mantorville news notes:

> Dr. John McMartin who has been spending his vacation here, bade his many friends good-bye Monday afternoon (and his best girl sometime in the evening), and took the early train Tuesday morning for Minneapolis, where he will study in the office of Dr. Woodward [*sic*] during the coming summer.

Clearly, he was not a Doctor of Medicine by degree at this time. In January of 1885 Doctor McMartin returned to the Minnesota College Hospital, and in September of 1885 he enrolled in the old Louisville Medical College in Kentucky.[131] He was graduated from this college in March of 1886, and out of a class of 100 students he was awarded the gold medal for proficiency in his studies.[132] He returned to Mantorville,[132] but two weeks later he was in practice at Dodge Center. In that town he seems to have obtained a creditable practice, for in May of 1886 he was busy caring for the patients of his friend, Dr. Charles Hill (1824-1914) of Pine Island in Goodhue County, who had gone to Saint Louis to attend the thirty-seventh annual session of the American Medical Association.[125] When Doctor Hill returned Doctor McMartin moved to Kasson, where he remained until May of 1887. In that month he moved to Benson in Swift County,[137] where he was licensed to practice medicine on June 25, 1887, receiving License No. 1479.[40] The ravages of pulmonary tuberculosis soon forced him to cease the practice of medicine, and in January of 1890 he left Benson to go to Saint Paul for medical care. He died in Saint Paul on April 24, 1890, of pulmonary tuberculosis,[321] and the funeral was held in Claremont in Dodge County.[324] He was buried in the old Ashland cemetery.

Dr. Lewis Thomas Francis (1855-1932), the last permanent physician in Wasioja, was born in Spring City, Pennsylvania, on July 6, 1855, the son of Thomas and Esther Francis.[325] In the summer of 1876 the young man went to Wheaton, Illinois, and in the fall he enrolled in Wheaton College in that city. He was graduated from Wheaton College, and next matriculated at the old Bennett College of Eclectic Medicine and Surgery, where he spent the winter of 1881 and 1882. In 1884 he was graduated from the Chicago Homœopathic Medical College, and for about a year thereafter he was associated with Dr. Leonard Pratt of Wheaton, Illinois. He next ventured to College Springs, Iowa, but he was never licensed to practice medicine in that state.[264] The climate there was not to his liking, and in September of 1886 he came to Wasioja in Dodge County.[136] Moreland[67] recalled that in 1886 Doctor Francis delivered a female infant to a woman in Wasioja; this child today (1943) is fifty-six years old. Doctor Francis was licensed to practice medicine in Minnesota in December of 1887, while he was living in Wasioja.[40] Licensure was made by exemption.

In 1890 or 1891 Doctor Francis went to Chicago to take postgraduate work at the Chicago Polyclinic Medical School. The course was finished on February 3, 1891, and he came back to Wasioja. In November of 1892 he was married to Miss Annie E. Cooper of Wasioja.[325] Ten years passed, and in November of 1902 he left Dodge County to settle in Hammond in Olmsted County,[326] where he remained for six years. In about 1908 he removed to Renville in

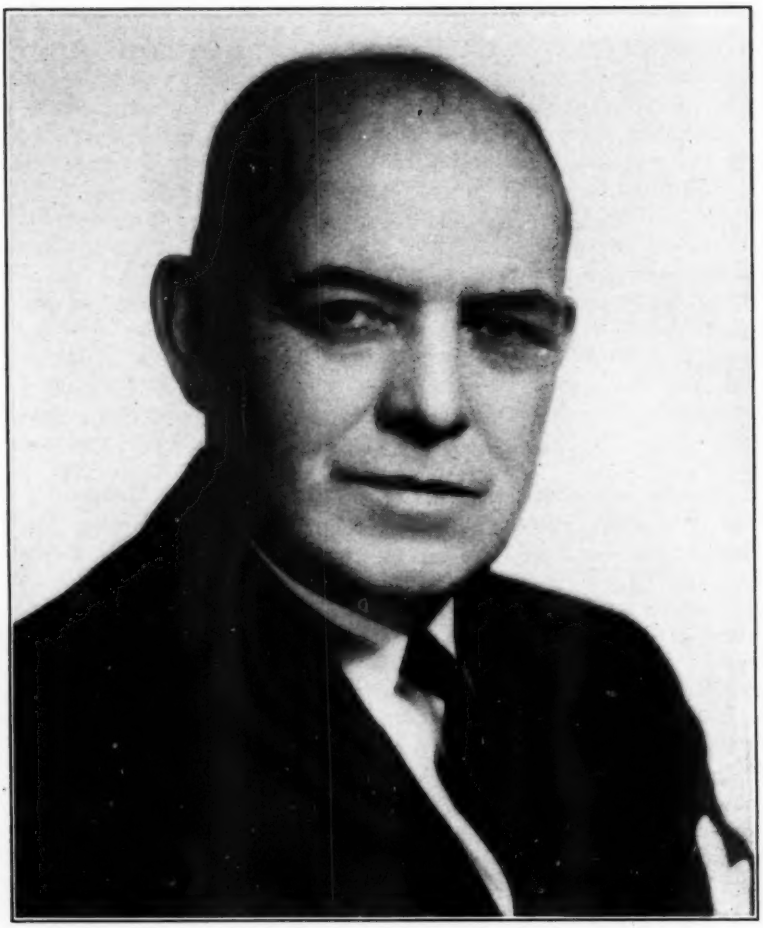
Renville County, and there he spent the rest of his life. He died on September 26, 1932, of toxemia and exhaustion brought about by carcinoma of the rectum for which he had undergone a palliative operation in Saint Paul in 1931.[327] His widow reported[325] that Doctor Francis had been a general practitioner of medicine who was particularly skilled in the care of children's diseases, and that he had remained a careful and conscientious physician to the end.

Dr. Arthur L. Travis (1861-1927) was born in Syene, Wisconsin, on April 2, 1861, the son of James Travis and Laura Sutherland Travis.[330] According to the registrar[331] of the University of Wisconsin, Doctor Travis was a student in that university in 1877, and in that year was still a native of Syene. He was graduated from Rush Medical College, Chicago, in 1887, and on April 28, 1887, was licensed to practice medicine in Minnesota under Certificate No. 1377.[40] He opened an office above the Central Store in Claremont in April of 1887,[139] but left the town in May of the same year[138] to go to Cottage Grove, Wisconsin, and later to Princeton, in the same state. He settled in Minneapolis in about 1914, opening an office at 1829 East Lake Street. His residence was at 506 Fifteenth Avenue Southeast. By the year 1921 he had an office at 456 Temple Court (Hennepin and Washington Avenues). In 1923 he moved to 304 Besse Building, and at his death was living at 3032 Emerson Avenue South. Doctor Travis was a member of the Volunteer Medical Service Corps during the first World War, and a member also of the Hennepin County Medical Society and the Minnesota State Medical Association. He died in Minneapolis on August 16, 1927.[332]

Dr. Elmer John Tiedemann (1861-) was born in Mauston, Juneau County, Wisconsin, on August 10, 1861,[40] and was graduated from the Rush Medical College at Chicago in 1886, where he doubtless knew Dr. Elias Wells Kellogg (1859-1923), then a part-time student in the same institution. Doctor Tiedemann, as previously mentioned, came to West Concord in Dodge County in May of 1887, where he bought the team of horses that had belonged to Dr. Charles W. Merrill, who had left the town to return to Wisconsin.[140] Doctor Tiedemann was licensed to practice medicine in Minnesota by exemption, at an unspecified date.[40] Moreland[67] remembered Doctor Tiedemann well as a physician in West Concord. Doctor Tiedemann was married in 1888, at his home in Mauston, and in 1890 a son was born in West Concord. In July of that year he moved to La Crosse, Wisconsin,[144] but he later lived in DeSoto, Wisconsin. After some years he moved to Adrian in Nobles County, Minnesota, where he was residing at the time of this report (1943).

(To be continued in the February issue)

References will appear at the conclusion of this article.



E. Mendelssohn Jones, M.D.
President, Minnesota State Medical Association

President's Letter

COUNTY SOCIETIES MUST BE STRONG

Medicine in Minnesota, as in the rest of the country, faces a period of readjustment and change.

Even if there should be no serious threat of government control and controversial alterations in methods of practice, many adjustments will have to be made if the physicians returning from military service are to be re-established smoothly where they are needed when the peace comes.

There are already planning committees of all complexions and persuasions. Each one has its own scheme for remaking the world or the home town and most of them are including medicine in their planning. In the midst of them stand the county and district medical societies as the sole organizations with the knowledge and experience to guide the medical aspects of these plans.

That means that a great responsibility for the future of medicine and the public welfare rests upon the units of organized medicine. Indeed, I believe we are all inclined to overlook the fact that the county medical society is the foundation and most important unit in our great superstructure of state and national bodies. If the county unit is weak, passive or indifferent to the social problems involving the health of the people, then the state and national organization will be weak, too, and impotent in the face of threats against professional standards. The old saying that the chain is as strong as its weakest link is profoundly true, especially in a professional organization which is so intimately involved with the life of every community.

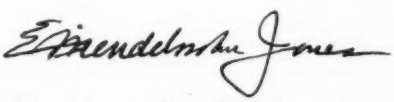
In the year ahead, it is my hope as president, that the Minnesota State Medical Association will do some clear-cut thinking and planning about future needs in Minnesota and lay a firm groundwork for meeting those needs.

To that end, the Council has just authorized appointment of a state-wide postwar planning committee for medicine which will be made up of representatives of every county and district medical society in the state. This committee will need information as to population and facilities which only the county medical society can secure. Its success will depend upon the interest and help of the practicing physicians of the state.

It is true that most physicians left in civilian practice are overburdened these days. But that fact must not be allowed to stand in the way of maintaining strong local organizations and contacts. America cannot successfully be reshaped and restored to the ways of peace from Washington. Adjustments and improvements, if they are to endure, must be made at home and largely out of materials and resources of the home community and state.

For that reason county and district medical societies must continue to be a factor in community life as well as in scientific advancement of their members. No demands made by the war should be allowed to keep those of us who remain at home from active participation in their affairs.

I wish it were possible for me to meet and talk with every member of the association during my term as president of the Minnesota State Medical Association. Failing that, I shall do my best through meetings and correspondence to know the problems and needs of medical men throughout the state and, by helping to meet them, fulfill, in some measure, the high duties of my office.



President, Minnesota State Medical Association.

Editorial

CARL B. DRAKE, M.D., *Editor;* GEORGE EARL, M.D., HENRY L. ULRICH, M.D., *Associate Editors*

MATERNITY ASSISTANCE FOR SOLDIERS' WIVES

WHEN it was felt that the wives of servicemen in the lower income brackets would doubtless need financial help for confinement expenses, a federal appropriation of one million dollars was made to be handled by the Children's Bureau through the various State Boards of Health in states concurring in the plan. The demand far exceeded the contemplated need, and an additional three million dollars was allocated, and still later in 1943, eighteen million more. So far some hundred thousand requests for financial aid have been received.

In formulating plans for this new departure in providing federal funds for a certain group in the body politic, the opinion of medical groups was not given much consideration, and in some instances, state boards took action without conferring with state medical associations. This was not the case, however, in Minnesota.

That there is some need for such assistance is undeniable and was officially recognized by the American Medical Association. Our national organization stipulated, however, that the matter of the medical fee should be permitted to be arranged between the soldier's wife and her physician. As the bill was passed, the soldier's wife is allowed a ward hospital bed, and her physician is paid a specified sum ($35.00 in some states, $40.00 in others, and $50.00 in others) for complete obstetrical care including prenatal and postnatal services. The contracting physician is not allowed to make any additional charge, although provision is made for a consultant's fee and a surgeon's fee if such service is needed. As a result, some obstetricians have refused to care for soldiers' wives while a few have donated their services when needed rather than have their fee set by the government. It is this feature of a dictated fee that has raised objections in medical circles through the country. While the allowance is in line with obstetrical fees charged by many general practitioners, the obstetrician is not allowed to make a charge in addition to the specified amount which, as stated, varies in different states.

There are several phases of the subject which are worthy of note. In the first place, any proposal which has to do with aiding mothers and children has at once a popular appeal. During wartime, people cannot do too much for the soldiers. Any opposition on the part of the national or a state medical association to such a plan because of an undesirable feature at once places the medical organizations in an unfavorable light. The powers that be refused to alter the undesirable feature of the bill, and state medical associations have one by one stepped into line though reluctantly in many cases and non-committal in others until forty-five states are now coöperating with the Federal Children's Bureau. Mississippi and Texas, if they have not already done so, will doubtless shortly be added to those in which the plan is operating, leaving North Dakota as the only state to flatly refuse to have the federal government dictate obstetrical fees.

THE NATIONAL FOUNDATION FOR INFANTILE PARALYSIS

THE National Foundation for Infantile Paralysis is one of several philanthropies in this country supported entirely by private contributions. These organizations show very plainly that America has a heart in coming to the rescue of the unfortunate with concerted action in a big way.

The National Foundation for Infantile Paralysis will conduct its eleventh campaign January 14 to 31, culminating its drive for funds on the President's birthday, January 30.

Organized on a national basis with state chairman and county committees, the Foundation will attempt to surpass the figure of over five and a half million dollars raised in 1942. Last year Minnesota raised nearly $91,000, the yearly sums subscribed in recent years showing a steady and rapid increase over the $20,000 raised in 1939.

For the information of those not posted, half of the amount raised in each county organized for the collection of funds are withheld for infantile paralysis activities within the county. Such activities include hospital care, transportation of those afflicted, the provision of machines and apparatus and the like. The other half, less the cost of the local campaign, is sent to the national organization. The national organization devotes its funds for research in poliomyelitis control and treatment in established medical centers and for public education. The avowed purpose of the organization is that no patient suffering from the disease or its sequelæ shall lack the best treatment medical science has to offer. Each state organization has its Medical Advisory Committee composed of outstanding surgeons to assist in reaching this goal.

Last year the national organization donated $175,000 in keeping with its policy, to the University of Minnesota Medical School for poliomyelitis research and study which is in addition to some $150,000 previously made available to the University, much of this amount having been devoted to the trial of Sister Kenny's methods from 1940 on.

In Hennepin County the Committee funds have been used for the treatment of poliomyelitis sufferers at Shriner's Hospital, the Kenny Institute in connection with the Minneapolis General Hospital and the Michael Dowling School. In Ramsey County funds are devoted to patients in the Gillette, Children's and Ancker hospitals and to assist pupils in the Lindsey school.

Last month the Foundation announced a grant of $150,000 for the establishment of the first center for the scientific study and development of physical medicine in the Graduate School of Medicine of the University of Pennsylvania. Its purpose will be to prove or disprove physiotherapy methods and to provide a center for the training of teachers in this branch of medicine. The Foundation in the past six years has already spent $350,000 in the training of physiotherapy technicians in techniques so useful in the treatment of poliomyelitis and has granted an additional $364,000 to laboratories and universities for the investigation of problems in physiology and medicine related to physiotherapy. Both phases will now be studied in this new center in Philadelphia.

Last year some 55,000 volunteer workers gave their time and effort to the campaign with the result that expenses were kept down to 2.6 per cent of the sum collected nationally and in Minnesota to .82 of 1 per cent. It is planned this year to organize a National Women's Division with state chairmen and women's committees in each county if possible.

Until such time as research shows the way to prevent poliomyelitis there will be a need for funds to combat this terrifying disease. Last year the epidemic in our county as a whole was the worst since 1931. This will doubtless further stimulate those taking part this year in the nation-wide fight against this stubborn enemy.

A MEDICAL SERVICE BUREAU IN WASHINGTON

AT the June, 1943, meeting of the A.M.A. House of Delegates, some six state society delegations proposed resolutions that the A.M.A. establish an office in Washington, which would make the medical viewpoint on problems concerning medicine available to governmental agencies and which would keep the medical profession informed on matters affecting medical care in general. Minnesota delegates took an active part in the proposal. The result was the formation of the Council on Medical Service and Public Relations, but the whole point of the proposal seems to have been lost by the provision that the establishment of the Washington office be left to the discretion of the newly formed Council. The Council has so far not established a Washington office. It should be stated that the Council has had difficulty in finding a suitable full-time secretary, and it required several months of search before the services of Dr. G. L. Kelly, Dean of the Medical School of the University of Georgia, were obtained, effective January 1, 1944.

There has been a growing feeling on the part of many physicians throughout the country that the wishes of the profession in regard to the establishment of a Washington office have been ignored.

It is interesting to learn that on December 11, 1943, representatives of the medical associations of Arizona, California, Colorado, Idaho, and Utah, met at Salt Lake City and unanimously voted to form an organization to be known temporarily as the Western States Public Health

League for the avowed purpose of maintaining a medical service bureau in Washington, the cost to be met by a per capita assessment of members of some eleven western medical associations, some five additional state associations having signified their approval without being able to send representatives to the meeting. It is expected that final approval and appropriation of funds will be given by these eleven western medical associations by the end of January, 1944, so the Washington office can be established.

At this Salt Lake City meeting, a report was presented by Mr. Ben H. Read, Executive Secretary of the Public Health League of California, who was sent to Washington by the California Medical Association to obtain information on the status of the medical profession in governmental circles. Evidently his report showed an outstanding need for such an office.

Other states are invited to join this Western States Public Health League in what promises to be a nation-wide movement. The formation of this league indicates the demand for a Washington office. It should represent all the states and not a sectional group, and it is to be hoped this will be the ultimate outcome.

THE MEDICAL GUILD THREATENED

THE Wagner-Murray Bill, as every physician who has read the numerous articles on the subject which have appeared in the *AMA Journal* or the several editorials which have appeared in MINNESOTA MEDICINE knows, and as all congressmen should know, places all control of medicine in the hands of the Surgeon General of the United States Public Health Service under bureaucratic control in Washington. Every physician must be convinced that such an undertaking will result of necessity in deterioration in the high standard attained by American Medicine. Financial support from Washington means control in Washington and politics will play an important part in such matters as the designation of specialists, the establishing of new hospitals and medical education.

How much the man on the street knows or cares about the Wagner-Murray Bill is difficult to evaluate. We recently received a communication from a manufacturer attempting to interest us in the provisions of the law relating to the renegotiating of war contracts as it now stands. Knowing very little about the subject we immediately suspected that the manufacturer had his axe to grind and were not particularly interested. We suspect this attitude is much the same as that of the layman in regard to this medical bill. And we also suspect that any effort on the part of the medical profession to influence the laity or Congress will be met with the same suspicion that the profession has its axe to grind.

There is one line of approach however which each physician can use in combatting this nefarious bill. Each physician sees several patients each day. He can and should take the time to inform them about the danger threatening medical practice. He could well explain the progress made in the science and practice of American Medicine over a long period of years through the efforts of the profession itself. How the profession has been outstanding since the time of Hippocrates in its education, often without compensation, of succeeding generations of doctors, how it has donated its services to those who could not afford a doctor's fee, how through the various Councils of the AMA it has improved medical education, raised the standards of hospitals, approved valuable medical remedies and fought quackery, established the various Boards for qualified specialists, fostered medical meetings, published medical journals and conducted other activities too numerous to mention—all for the betterment of American medicine. The substitution of political and bureaucratic control of medicine will counteract all this.

Public opinion is a powerful factor and it is important that the public should know what the Wagner-Murray Bill will do to American Medicine.

Tuberculosis has been present for so long and people are so accustomed to it, that the interest of the public and of many public health workers is in danger of being sidetracked to more glamorous and exciting problems. This is a serious deterrent to accomplishment in this field. Further, the decline in tuberculosis, both in morbidity and mortality, in the last 40 years, may lead some to think that the problem is one of the past. Let there be no mistake in this direction. Tuberculosis continues to be a real problem. If, instead of comparing the tuberculosis rate of today with what it was 50 years ago, one will compare the tuberculosis prevalence and mortality of today with today's prevalence and mortality of other diseases, the present seriousness of the tuberculosis problem can be appreciated. In the most productive period of life, tuberculosis continues to cause more deaths than any other one disease. Ed., Am. J. Public Health, July, 1943.

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

INSURANCE MEN SEEK AID

It is interesting to see how the threat of government expansion in social security has made allies of organizations which formerly had little in common.

Insurance companies whose contacts with medicine have been limited largely, heretofore, to compensation matters and the physical examination of subscribers, are now seeking medical support for a common front against the extension of government insurance, including medical and hospital insurance, in the United States.

Mr. E. H. O'Connor of Chicago who spoke to groups of doctors, dentists, pharmacists and hospital men in the Twin Cities in December is spokesman and executive director for an organization of insurance companies established in 1917, some years before medicine felt itself seriously threatened by government control. The organization is called the Insurance Economics Society of America and its policy, as expressed by Mr. O'Connor is, at this stage, to seek and cement coöperation of all groups and professions especially effected by proposals in the Wagner-Murray-Dingell bill and in the recommendations of the National Resources Planning Board.

May Be Campaign Issue

This is the spade work of opposition. The actual battle will not be carried to the public until the issue is joined. It is his belief that Congress will not act on the Wagner bill at this session but he feels sure that expanding social security will become a campaign issue in the election. When it does become such an issue it will be time, the insurance companies believe, to go direct to their millions of subscribers.

Meantime much of what he said at the Twin City meetings was familiar to medical men who have observed with growing concern the general tendency toward regimentation and a stifling bureaucracy. In general, Mr. O'Connor's text was that the voluntary efforts of the individual to provide his own protections including his own medical service, should be encouraged rather than destroyed; that the economic and social conditions in America are not suitable for the substandard social protections worked out for Europeans. With that text physicians will heartily agree.

The extent to which Americans have already purchased their own protection against accident and illness were impressive as shown by Mr. O'Connor.

Millions Already Protected

"Between 1919 and 1942," he said, "the net premiums written in the United States by health and accident insurance companies increased from 60 million dollars to 359 million dollars. It is estimated that the number of persons in the United States protected under some form of health and accident insurance has grown from eight millions in 1934 to over 30 millions in 1942. The figures for 1943 will show a continuance of these increases.

"It should be pointed out," he said further, "that the rate of growth in the number of persons insured exceeds the rate of growth in premium volume. This is explained partly by the rapid expansion of group accident and sickness insurance and of hospitalization insurance and partly by the fact that many new policies have been devised and marketed, offering coverage in the lower limits of indemnity."

Privately, Mr. O'Connor told interested listeners after the meeting that the insurance companies can and probably will, in the future offer much more extensive coverage on an indemnity basis for medical care than most of them offer now. The obstacle in the way lies chiefly in the va-

rious state laws many of which would have to be altered before the large insurance companies could expand in that field. If the government steps in of course all other efforts in that field will be stifled.

Non-profit Plans Approved

He was very far from expressing any opposition to either the Blue Cross hospitalization plans or to any non-profit voluntary medical insurance plans sponsored either coöperatively or by medical societies in various parts of the country. The great trouble with the latter has been, in his opinion, that as soon as enabling legislation is secured to permit their operation on a non-profit basis, in any locality, a half a dozen or more organizations immediately spring into being making success difficult, if not impossible, for any. Such has been the case in New York and it should be guarded against, if possible where similar plans are contemplated elsewhere.

Insurance Principle Accepted

In any case, the principle of insuring against loss from unpredictable and involuntary expenditures such as those caused by death, accident, fire, hospitalization and illness is accepted as sound by most Americans.

The question is not whether there should be insurance protection against these things but whether the insurance protection which the individual can purchase for himself and enjoy as the fruit of his own labor is not better for Americans than the insufficient, sub-standard protection which is all that can be guaranteed by the government in spite of terrific costs in taxes and in abbrogated civil liberties.

There is no doubt of the answer of medical men and of all liberty loving Americans if the question is put to them fairly.

So far America has taken only a few preliminary steps in the direction of complete legislative cradle-to-the-grave protections for its citizens. The legislation is only a few years old but its operations have already shown up gaps and errors. These gaps should be filled and the errors rectified because this legislation is on the statute books to stay

Security by Handout

But here our program of security by government handout should halt. Real protection for Americans still means the security they can earn for themselves by jobs and by equal opportunity for education and advancement.

Security by handout is for nations for whom the horizons of new opportunity have closed down permanently for the majority. If we are not ready to admit that such is the case in America then we must place our emphasis for the future, not upon paternalism, but upon the preservation of freedom and opportunity. When opportunity languishes and employment is consistently precarious, when great numbers of men go hungry and are impoverished and ill through no fault of their own, then it will be time to turn to the government, remembering always that the government does not give without taking. In this instance it will take not only the liberties but the initiative and energies of the people.

An illuminating footnote to Mr. O'Connor's remarks was his observation, also, that the figures upon which cost estimates of the Wagner-Murray-Dingell legislation were based came from prewar German statistics. Obviously such figures were not available from any previous experience in the United States; but it was nevertheless startling to hear that congressmen of the United States should be borrowing for the people of the United States from the most pernicious system in all prewar Europe.

Last Resort

The point for congressmen and all others who dream of a millenium to remember is this: government sickness insurance is a measure of last resort. It is suitable only when the great majority of people are getting very poor medical service or none at all and the social economy is such that it is impossible for them to provide anything better for themselves.

Our present system of medicine in America is admittedly not perfect. It needs improvement at many points. But it is better than anything available anywhere else in the world and the health of the people is the best of any comparable group in the world.

Furthermore, the vast majority of the people are able to provide it for themselves and theirs is the money that keeps it going. So long as that is the case, it makes little difference whether they spread the costs by insurance or develop some other methods of easing payments.

PREPAYMENT EXPERIMENTS IN MINNESOTA

The only prepayment plans for medical service now in operation under medical society sponsorship in Minnesota are the experiments in cooperation with the Farm Security Administration for FSA clients in Ottertail, Wilkin, Morrison and Mille Lacs counties

From one point of view, only, have these experiments been satisfactory—that of providing the doctors with valuable experience in a new form of service.

Perhaps as a last minute bid for self-perpetuation, the Farm Security Administration appealed recently to the Council of the Minnesota State Medical Association for permission and approval to extend the plan to low income farmers (not FSA clients) in Wadena county.

Few "Low Income" Farmers

In consideration of the fact that there are very few low income formers in Wadena or anywhere else at the present time, and that such efforts by a federal agency would encroach upon and duplicate services already provided under the state law by the Division of Social Welfare, the Council refused its approval.

In the course of discussions on the matter, the following interesting facts came to light.

About 60 per cent of eligible FSA clients are subscribers to the plan in Ottertail county. In Morrison county the percentage is 44 and in Mille Lacs county it is only about 42. Even the Ottertail percentage is too low for sound financing and FSA administrators have fallen down on their own promises of at least 75 per cent participation on the part of the client families.

Premiums during the first two years were only $22 and too low for good service. They have been raised by the FSA to $30 this year.

Within the last month, Congress failed again to appropriate money for the FSA. Nevertheless, sufficient funds are said to be on hand to operate for a full year.

Willing to Continue

In general, the doctors have received about 65 per cent of normal fees from their FSA practice and more than 66 per cent from the Division of Social Welfare for care of relief clients and others provided for under Minnesota relief laws.

They are willing, however, to continue in the four counties approved by the Council for the experiment for the sake of learning more about prepayment plans for medical service.

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

Julian F. DuBois, M.D., Secretary

ROCHESTER RESIDENT SENTENCED FOR FORGING NARCOTIC PRESCRIPTIONS

Re United States of America vs. Lester Stellmacher

On November 20, 1943, Lester Stellmacher, thirty-nine years of age, Rochester, Minnesota, was sentenced to a term of 5 years in the United States District Court at St. Paul, the sentence being suspended and the defendant placed on probation by Judge Robert C. Bell on condition that Stellmacher report on or before December 1, 1943, to the Federal Hospital for drug addicts at Lexington, Kentucky.

Stellmacher had forged several narcotic prescriptions on physicians at Rochester and other towns in that vicinity. He has a previous conviction for a similar offense in July, 1939, when he was sentenced to 3 years in the United States District Court at Winona. The sentence, at that time, was suspended and the defendant placed on probation.

Stellmacher operated a tourist camp at Rochester, Minnesota, and the facts indicate that he has been addicted to the use of narcotic drugs since 1934. He attributes his addiction to the use of narcotic drugs prescribed for severe attacks of asthma.

SIXTH ANNUAL CONGRESS ON INDUSTRIAL HEALTH

The sixth Annual Congress on Industrial Health will take place on February 15 and 16, 1944, at the Palmer House in Chicago. Those who expect to attend are urged to make travel and hotel reservations at their earliest convenience. These sessions follow directly after those of the Annual Congress on Medical Education and Licensure. The deans of medical schools and others interested in medical education may find it possible to attend the sessions on industrial health; a special effort will be made to induce them to do so. Official representatives of medical societies and allied organizations can attend both congresses this year without extra travel. One of the great obstacles to the growth of industrial medical service has been the slow development of public interest in the health and economic benefits which the physician can bring to the industrial organization. The Congress on Industrial Health, therefore, will attempt to attract greater interest from management and labor. Prominent representatives of these groups will be asked to participate. Interest in the physical welfare of the working population must be maintained even after the stimulus of wartime production is over. This element in postwar planning must be encouraged. The sessions of the sixth Annual Congress on Industrial Health will attempt to bring this relationship into proper focus. The congress will also emphasize the importance of physical restoration, retraining and reëmployment of the disabled, an issue which is certain to be a source of medical preoccupation for some years to come. Industrial health is gradually assuming greater and greater importance as an avenue for the distribution of medical service. Every physician and medical organization should recognize the trend so that the movement may be guided along dependable scientific and educational lines.—*JAMA*, December 25, 1943.

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Farsht, Lt. Col. I. J.....Minneapolis
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Haes, Capt. J. E.....Vernon Center
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Havel, Lt. T. E.....Blue Earth
Hawkinson, Major R. P....Minneapolis
†Hays, A. T.....Minneapolis

*Died in Service
**Reported missing in action
†Rank unknown

Head, Major D. P. ..... Minneapolis
Hebbel, Major Robert ..... Minneapolis
Heck, Capt. W. W. ..... St. Paul
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Koskela, Lt. L. E. ..... Sebeka
Kozberg, Capt. Oscar ..... Moose Lake
Krause, Capt. C. W. ..... Fairmont
Kreilkamp, Lt. B. L. ..... Rochester
Krieser, Capt. A. E. ..... Boyd
Kucera, Lt. L. J. ..... Lonsdale

La Bree, Capt. R. H. ..... Duluth
Large, Capt. H. R. ..... Rochester
Larrabee, Lt. W. F., Jr. ..... Rochester
Larsen, Lt. F. W. ..... Minneapolis
Larson, Comdr. L. M. ..... Minneapolis
Larson, Capt. M. H. ..... Nicollet
Lauer, Lt. Comdr. D. J. ..... St. Paul
Leck, Capt. P. C. ..... Austin
Lehnhoff, Lt. H. J., Jr. ..... Rochester
Leick, Capt. R. M. ..... St. Paul
Leighton, Major Robert ..... Evansville

Leland, Lt. Comdr. J. A. C., Jr. ..... Minneapolis
Lenander, Capt. M. E. ..... St. Peter
Lien, Lt. R. J. ..... Rochester
Lillie, Lt. J. C. ..... Rochester
Lindahl, Lt. W. W. ..... Rochester
Lindberg, Capt. V. L. ..... Minneapolis
Lindgren, Major R. C. ..... Minneapolis
Lippman, Major E. S. ..... Minneapolis
Lipschultz, Major Oscar ..... Minneapolis
Litman, Capt. A. B. ..... Minneapolis
Little, Lt. A. G., Jr. ..... Rochester
Lovelace, Lt. Col. W. R. ..... Rochester
Lovelady, Major S. B. ..... Rochester
Lovering, Capt. Joseph ..... Rochester
Lovshin, Lt. L. L. ..... Wausau, Wis.
Lueck, Lt. (jg) A. G. ..... Rochester
Lufkin, Comdr. N. H. ..... Minneapolis
Lundblad, Capt. R. A. ..... Minneapolis
Lundblad, Capt. S. W. ..... Minneapolis
Lundquist, Capt. C. W. ..... Winona
Lynch, Lt. R. C. ..... Rochester
Lysne, Capt. Myron ..... Minneapolis

Macey, Lt. H. B. ..... Rochester
Mack, Capt. J. J. ..... Chicago, Ill.
MacKay, Lt. H. J. ..... Seattle, Wash.
MacKinnon, Lt. Comdr. D. C. ..... Minneapolis
Macklin, Lt. Comdr. W. E., Jr. ..... Litchfield
MacLean, Lt. (jg) A. R. ..... Rochester
MacMillan, Lt. D. G. ..... Triumph
MacRae, Lt. Col. G. C. ..... Duluth
Madland, Capt. R. S. ..... Fairfax
Magath, Capt. T. B. ..... Rochester
Mark, Lt. Col. Hilbert ..... Minneapolis
Marks, Capt. R. W. ..... St. Paul
Marsh, Lt. O. M. ..... Litchfield
Marvin, Lt. (jg) C. P. ..... Rochester
Mason, Lt. J. A. ..... International Falls
Mattison, Lt. R. E. ..... Minneapolis
Mattson, Lt. A. D. ..... Atwater
Mattson, Lt. Comdr. C. H. ..... St. Paul
Mayne, Comdr. R. M. ..... Duluth
Mayo, Lt. Col. C. W. ..... Rochester
Maytum, Lt. Col. C. K. ..... Rochester
McCaffrey, Lt. F. J. ..... Minneapolis
†McCallig, J. J. ..... Rochester
McCarthy, Capt. Donald ..... Minneapolis
McCrimmon, Comdr. H. P. ..... Minneapolis
†McEacheran, C. G. ..... Rochester
†McElligott, E. W. ..... Breckenridge
McEnaney, Capt. C. T. ..... Owatonna
McKenzie, Lt. Comdr. C. H. ..... Minneapolis
Mead, Lt. Comdr. C. H. ..... Duluth
Mears, Lt. B. J. ..... St. Paul
Medelman, Major J. P. ..... St. Paul
Merrill, Lt. Robert ..... Morris
Messler, Lt. J. D. ..... Rochester
Meyer, Capt. J. O. ..... Grand Rapids
Meyer, Capt. W. M. ..... Winona
Michel, Capt. H. H. ..... Minneapolis
Miller, Lt. Harold E. ..... Minneapolis
Miller, Lt. Comdr. Hugo E. ..... Minneapolis
Minge, Lt. R. K. ..... Clarkfield
Minckler, Lt. J. E. ..... Virginia
Moir, Major W. W. ..... Stillwater
Mollers, Capt. T. P. ..... Mountain Iron
Monserud, Lt. N. O. ..... Cloquet
Monson, Lt. E. M. ..... Minneapolis
†Monson, L. J. ..... Canby
Moos, Lt. D. J. ..... Minneapolis
Moren, Lt. L. A. ..... St. Paul
Mouritsen, Lt. G. J. ..... Fergus Falls
Mousel, Major L. H. ..... Rochester
Muir, Capt. W. F. ..... Graceville
Mulligan, Lt. Col. A. M. ..... Brainerd
Murphy, Lt. E. P. ..... Minneapolis
Murphy, Lt. J. E. ..... Marshall
Murray, Capt. R. A. ..... Aitkin
Musgrove, Capt. J. E. ..... Rochester
Musty, Capt. N. J. ..... Minneapolis

Naegeli, Capt. A. E. ..... St. Paul
Naslund, Lt. Comdr. A. W. ..... Minneapolis
†Nauth, B. S. ..... Winona
Neale, Lt. R. M. ..... Rochester
†Neel, H. B. ..... Albert Lea
Nelson, Capt. K. L. ..... Montgomery
Nelson, Capt. L. M. ..... Minneapolis
Nelson, Lt. L. S. ..... Hibbing
Nelson, Lt. M. C. ..... Minneapolis
Nelson, Lt. O. L. N. ..... Minneapolis
Nelson, Major R. L. ..... Duluth
Nelson, Major W. I. ..... Minneapolis
†Nesheim, M. O. ..... Emmons
Newell, Lt. F. W. ..... St. Paul
Nickel, Capt. W. R. ..... Rochester
†Nielsen, A. M. ..... Northfield
Noble, Capt. J. L. ..... St. Paul
Noonan, Lt. Col. W. J. ..... Minneapolis
Nuebel, Lt. C. J. ..... St. Paul

O'Brien, Capt. W. M. ..... St. Paul
Ogden, Lt. Comdr. Warner ..... St. Paul
Olds, Capt. G. H. ..... Waseca
O'Leary, Lt. J. H. ..... Staples
†Olsen, E. G. ..... Minneapolis
†Olson, C. J. ..... Belle Plaine
Olson, Lt. G. E. ..... West Concord
Olson, Lt. L. M. ..... Chisago City
Olson, Lt. S. W. ..... Rochester
Owens, Lt. W. A. ..... Montevideo

Paine, Major J. R. ..... Minneapolis
Palen, Capt. B. J. ..... Minneapolis
Palmerton, Lt. E. S. ..... Albert Lea
Pankratz, Lt. P. J. ..... Mountain Lake
Parson, Lt. E. I. ..... Duluth
Patch, Capt. O. B. ..... Duluth
†Patterson, H. D. ..... Anoka
Patterson, Lt. (jg) S. A. ..... Duluth
Pattison, Lt. D. H. ..... Rochester
Paulson, Capt. E. C. ..... Elbow Lake
Paulson, Capt. D. L. ..... Rochester
Pedersen, Lt. R. C. ..... Duluth
Pender, Lt. (jg) J. W. ..... Rochester
Pennington, Capt. R. E. ..... Rochester
Perlman, Lt. Col. E. C. ..... Minneapolis
Perry, Lt. T. T. ..... Rochester
Petersen, Capt. R. T. ..... Minneapolis
Peterson, Lt. Comdr. D. B. ..... St. Paul
Peterson, Lt. Comdr. H. W. ..... Minneapolis
Peterson, Lt. J. H. ..... Duluth
Peterson, Lt. W. G. ..... Rochester
Pewters, Lt. J. T. ..... Minneapolis
Phalen, Capt. G. S. ..... Rochester
Plimpton, Lt. N. C., Jr. ..... Rochester
Pohl, Lt. Comdr. J. F. ..... Minneapolis
Pollard, Major D. W. ..... Minneapolis
Ponterio, Lt. J. E. ..... Shakopee
Potek, Lt. David ..... International Falls
Preston, Lt. F. W. ..... Rochester
Priest, Capt. R. E. ..... Minneapolis
Priestley, Lt. Col. J. T. ..... Rochester
Prins, Lt. L. R. ..... Albert Lea
Proeschel, Lt. R. K. ..... Willmar

Quello, Capt. R. O. B. ..... Minneapolis

Ramsay, Flight Lt. R. M. ..... St. Paul
Rasmussen, Lt. W. C. ..... Rochester
Rea, Major C. E. ..... St. Paul
Reif, Capt. H. J. ..... St. Paul
Rewbridge, Major A. G. ..... Minneapolis
Rice, Lt. H. G. ..... Moorhead
Rice, Lt. Comdr. H. R. ..... Roseau
Richardson, Lt. Col. F. S. ..... Minneapolis
Richardson, Lt. R. J. ..... Rushford
Rick, Lt. P. F. W. ..... St. Paul
Rinkey, Lt. Eugene ..... Redwood Falls
Ritchie, Major W. P. ..... St. Paul
Rizer, Lt. D. K. ..... Minneapolis
Roberts, Lt. L. J. ..... Minneapolis
Roberts, Lt. S. W. ..... Minneapolis
†Roemer, H. J. ..... Winona
Rogers, Lt. J. D. ..... Rochester
Rogne, Capt. W. G. ..... Spring Grove
Rosenfield, Major A. B. ..... Hibbing
Rosenholtz, Lt. Comdr. B. I. ..... St. Paul
Rosenthal, Capt. F. H. ..... Grand Meadow
Ross, Capt. A. J. ..... Minneapolis
Rossen, Lt. R. X. ..... Hastings
Roth, Lt. F. D. ..... Lewiston
Rudie, Lt. Comdr. P. S. ..... Duluth
Ruggles, Capt. G. M. ..... Forest Lake
Rulison, Lt. F. T., Jr. ..... Rochester
Rumpf, Lt. Col. C. W. ..... Faribault
Russeth, Lt. A. N. ..... Minneapolis
Ryan, Major J. M. ..... St. Paul

Sach-Rowitz, Lt. Col. Alvan ..... Moose Lake
Sadler, Lt. Comdr. W. P., Jr. ..... Minneapolis
St. Cyr, Capt. K. J. ..... Osseo
Saliterman, Capt. B. L. ..... Minneapolis
Samson, Lt. Comdr. E. R. ..... Stillwater
Samuelson, Major L. G. ..... Mankato
Sandt, Capt. K. E. ..... Minneapolis
Sather, Lt. G. A. ..... Fosston
Sather, Lt. R. N. ..... McIntosh
Sather, Major R. O. ..... Crookston

†Rank unknown

Sayre, Capt. G. P.....Rochester
Scales, Lt. J. R.....Rochester
Schamber, Lt. W. F....Parkers Prairie
Schleinitz, Capt. F. B.....Battle Lake
Schlicke, Lt. C. P.....Rochester
Schmidt, Lt. Col. G. F.....Minneapolis
Schmidt, Major H. W.....Rochester
Schmidt, Capt. W. R.....Worthington
Schmitt, Lt. G. F., Jr.....Rochester
Schneider, Lt. H. H...Kansas City, Mo.
Schroeckenstein, Lt. H. F.....St. Paul
Schulze, Lt. W. M.....Swanville
Schweiger, Lt. T. R.....Hibbing
Schwyzer, Capt. H. C.....St. Paul
Sealy, Capt. W. B.....Rochester
Seashore, Capt. R. T.....Duluth
Seljeskog, Major S. R.....Minneapolis
†Sellers, G. K.....Dassel
Sharpe, Capt. W. S.....Minneapolis
Shaw, Lt. H. A.....Lake Park
Shelden, Lt. J. T.....Rochester
Shephard, Lt. V. D.....Rochester
†Shick, R. M.....Rochester
Shima, Lt. G. J.....Sleepy Eye
Shimonek, Lt. Comdr. S. W....St. Paul
†Sidell, C. M.....Rochester
Simons, Lt. Col. L. T.....St. Paul
Simons, Lt. S. J.....Akeley
Simonson, Lt. D. B.....Minneapolis
Simonton, Major K. M.....Rochester
Sinykin, Capt. M. B.....Minneapolis
Sjostrom, Lt. L. E.....Storden
Sloan, Capt. Julius.....Minneapolis
Smith, Lt. F. H.....Rochester
Smith, Lt. G. G.....Fulda
Smith, Major L. A.....Balaton
†Smith, L. A.....Rochester
Snell, Comdr. A. M.....Rochester
Snyker, Capt. O. E.....Ely
Sonnesyn, Capt. N. N.....Le Sueur
Sorem, Lt. (jg) M. B.....St. Paul
Spano, Capt. J. P.....Minneapolis
Sperling, Major Lou's.....Minneapolis
Spittler, Capt. R. O.....New Richland
Stafford, Capt. C. E.....Baudette
Stebbins, Capt. T. L.....Minneapolis
Steinberg, Lt. Comdr. C. L....St. Paul
Stemsrud, Capt. H. L.....Alexandria
Stewart, Lt. D. E.....Grand Rapids
Stewart, Lt. Col. N. E.....
.....Ft. Leonard Wood, Mo.
Stolpestad, Lt. H. L.....St. Paul
Stout, Lt. H. A.....Rochester
Stover, Lt. Lee.....Rochester
Stransky, Lt. T. W.....Owatonna
Stratte, Major A. K.....Pine City
Straus, Capt. M. L.....St. Paul
Street, Major Bernard.....St. Cloud
†Strom, G. W.....Rochester
Stromgren, Lt. D. T.....Minneapolis
Sullivan, Major R. R.....Minneapolis
Svien, Lt. H. J.....Rochester
Swanson, Major P. E.....Virginia
Swedenburg, Capt. P. A.....Swanville
Sweetser, Comdr. H. B., Jr.....
.....Minneapolis
Swenson, Lt. Comdr. A. O.....Duluth
Sybilrud, Lt. Comdr. H. W...Bricelyn

Taylor, Lt. E. S.....Worthington
Taylor, Lt. (jg) J. C.....Rochester
Teisberg, Lt. J. E.....Middle River
Thayer, Lt. E. A.....Truman
Thompson, Lt. C. A.....Hendricks
Thompson,, Major F. A.....St. Paul
Thompson, Lt. Comdr. G. J...Rochester
Thysell, Lt. D. M.....Minneapolis
Tibbetts, Lt. Comdr. M. H.....Duluth
Tifft, Lt. C. R.....St. Paul
Tillisch, Capt. J. H.....Rochester
Troost, Capt. H. B.....Mankato
Trow, Capt. J. E.....Minneapolis
Trytten, Capt. E. G.....Middle River
Tudor, Capt. R. B.....Hibbing
Tuohy, Lt. E. B.....Rochester
Tweedy, Lt. J. A.....Rochester
Twyman, Lt. R. A.....Rochester

Underdahl, Lt. L. O.....Rochester
Urberg, Major S. E.....Duluth

Vail, Lt. Comdr. J. B.....Henning
Van Demark, Lt. R. E.....Rochester
Vandersluis, Lt. C. W.....Bemidji
Van Valkenberg, Lt. J. D....Floodwood
Vaughn, Capt. L. D.....Rochester
†Virnig, M. P.....Wells

Wahlberg, Capt. E. W.....Sleepy Eye
Wallace, Lt. G. T.....Rochester
Walsh, Capt. F. M.....St. Paul
Walsh, Major M. N.....Rochester
Walsh, Capt. W. T.....Minneapolis
Walter, Lt. C. W.....St. Paul
Walters, Capt. Waltman.....Rochester
Warren, Major C. A.....St. Paul
Wasson, Lt. L. F.....Alexandria
Watkins, Comdr. C. H.....Rochester
Watson, Lt. S. W.....Royalton
Watson, Major W. J.....Holdingford
Weber, Comdr. H. M.....Rochester
Webster, Major L. J.....Battle Lake
Weis, Lt. Comdr. B. A.....St. Paul
Weisman, Major S. A.....Minneapolis
Weismann, Lt. R. E.....Rochester
Wellman, Lt. T. G.....Lake City
Wells, Lt. G. R.....Rochester
Wells, Lt. W. B.....Jackson
Wenzel, Lt. G. P.....St. Paul
Wheeler, Lt. Comdr. D. W.....Duluth
Whitacre, Lt. J. C.....St. Paul
†White, A. A.....Minneapolis
Whitehouse, Lt. F. R.....Rochester
Whitney, Lt. R. A.....Cambridge
Widen, Lt. Comdr. W. F...Minneapolis
Wiechman, Major F. H....Montgomery
Wildebush, Comdr. F. F....Minneapolis
Wilder, Capt. R. L.....Minneapolis
†Williams, J. A.....Hibbing
Williamson, Lt. Col. G. A.....St. Paul
Wilmot, Lt. C. A.....Litchfield
†Wilson, G. T.....Rochester
Wilson, Capt. I. H.....Worthington
Wilson, Lt. Comdr. J. A.....St. Paul
Wilson, Lt. W. H.....Rochester
Wingquist, Lt. C. G.....Crosby
Wipperman, Lt. F. F.....Minneapolis
Wolfe, Lt. Col. H. H.....St. Paul
Wolkoff, Capt. H. J.....St. Paul
Wolstan, Lt. S. D.....Minneota
Wood, Lt. W. W., Jr.....Rochester
Wulf, Lt. R. F.....Rochester

Yeager, Capt. C. L.....Rochester
Younger, Capt. L. I.....Winona

Zachman, Capt. L. L.....St. Paul
Zemke, Capt. E. E.....Fairmont

†Rank unknown

ARMY HOSPITAL TRAIN

Forerunner of others to come, a ten-car hospital train for the United States Army Medical Corps is now in use for training purposes as well as in combat areas overseas.

The ten-car, all-steel train was built at a cost of $135,000 by the Pullman Standard Company, and is illuminated throughout with fluorescent lamps in a variety of fixtures all specially-designed and engineered by Sylvania Electric Products, Inc., under special dispensation of the War Production Board.

Staffed by five medical officers, seven nurses and thirty-three enlisted men, the train is the last word in modern equipment and design for the transport of casualties. Narrower and shorter than standard-sized American railroad cars, the cars of the hospital train were especially constructed to roll on the sharp curves, and steep inclines of foreign tracks. Four cars are for personnel, 220-volt generators and steam boilers for heating and ventilating, kitchen-dining and pharmaceutical facilities.

Six of the cars are ward cars, each providing berths for sixteen bed patients, or more "sit-up" patients with the double-decker berths folded down. In the center of each ward car is an emergency operating area, a cleared space free of berths. Stretchers may be carried into the train through double-size doors in the center of the car, placed on portable standards, and used as an operating table without transfer of the casualty.

Minnesota Academy of Medicine

Meeting of November 10, 1943

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Minnesota Club in Saint Paul, on Wednesday evening, November 10, 1943. Dinner was served at 7 o'clock and the meeting was called to order at 8:15 by the President, Dr. H. B. Zimmermann.

There were forty-six members and one guest present.

Minutes of the October meeting were read and approved.

There was no business to come before the Academy so the scientific program followed immediately.

CARCINOMA OF THE RECTUM

With Report of 100 Consecutive Operative Cases

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Certain definite things are known about the early development of cancer of the rectum. One is that the condition not infrequently develops in previously benign adenomas. It is also known that cancer will develop in practically 100 per cent of cases of multiple polyposis unless the patient dies of some intercurrent disease. Cancer may develop in untreated rectal fistulæ and other chronic inflammatory processes. Some tumors are malignant in character as soon as they are large enough to be visible. There may be a very short period of premalignancy but, if so, the picture changes very early in their development. I have removed two tumors under 20 millimeters in diameter, and but slightly raised above the surface of the surrounding rectal mucosa, which microscopic examination proved to be definite adenocarcinomas. Cancers of this type and size are of course symptomless, and their discovery occurs only by chance during routine proctoscopic examination.

Symptoms of cancer of the rectum should be divided into two distinct groups. First are the early symptoms, which occur while the condition is still operable and the outlook for permanent cure is good. The only early symptoms of early cancer, are the passage of blood or blood-tinged mucus. The amount is often small and unfortunately these early symptoms are usually ignored or attributed to some other cause. As a result most patients come to the surgeon with a well-developed cancer, and only too often with one so far advanced, that any treatment other than palliative is impossible. Until patients and physicians realize the passage of even small amounts of blood or blood-tinged mucus calls for immediate proctoscopic examination, the early discovery of carcinoma will not increase. Unfortunately the type of bleeding is not characteristic. It is just like bleeding from most other causes. The amount is usually small and only noticed with defecation. The manner in which the mucus is passed is sometimes characteristic. In this case the mucus is expelled almost as soon as the patient arises and is accompanied by rather explosive flatus, and little or no stool. On cleansing the anal region the patient notes the presence of a small amount of slippery mucoid material, which may or may not be blood-tinged. In rare instances pain may be an early symptom, but this occurs only when the site of the tumor is at the rectal juncture and the anoderm is involved.

The second group of symptoms indicate well-developed or inoperable carcinomas. These are marked bleeding, urgency, and tenesmus with frequent passage of considerable amounts of mucus. Still later, low-back pain, anemia, loss of weight and strength occur. Unfortunately, these are the symptoms which are most often stressed. Only too often the physician waits patiently for them to appear instead of instantly making a proctoscopic examination upon the first complaint of any rectal disturbance. Since bleeding and/or perhaps a little mucus are the earliest symptoms of rectal carcinoma, we have made an effort to determine just how early in the development of the tumor they are likely to occur. The time depends somewhat upon the physical type of carcinoma, of which there two broad divisions. The first is the polypoid lesion, which may have either a long narrow strap-like pedicle or a short thick one. This tumor even no more than a centimeter in diameter will almost invariably cause considerable bleeding. The blood is bright red, and if not sufficient in amount to stain the water in the toilet, will at least be easily noticed on the stool or on the toilet tissue.

The second type of lesion is the one I have often referred to as the button carcinoma. It appears as a flat button-like elevation in the rectal mucosa. When only a few millimeters in diameter, this area appears as a thickening or elevation of the normal mucosa, but as the tumor increases in size, the center-portion appears indurated and is deep dusky red in color. By the time the tumor is 1.25 cm. in diameter, the dusky center-portion is necrosed and ulcerated. The tumor then presents the appearance of a button-like elevation with a necrotic or ulcerated center, surrounded by a ring of dusky red indurated mucosa, and this in turn surrounded by what appears to be a narrow band of normal, but elevated rectal mucosa. In these tumors there is no blood or mucus until central necrosis occurs. The amount of blood or mucus is usually small, though in exceptional instances a blood vessel may be eroded and fairly large amounts of blood be present. In the

beginning there is usually only a streak on the side of the stool or on the toilet tissue, and the amount is so small it passes unnoticed. While the bleeding usually occurs by the time the tumor is 1.25 cm. in diameter, the growth is likely to be 2 or more centimeters in diameter before bleeding is sufficient to be noted by the patient. While pedunculated lesions are often benign, the flat lesions are usually malignant and should be assumed so until biopsy and microscopic examination prove otherwise.

Discovered in this stage of development, most of these tumors are curable. Unfortunately at the present time but a small proportion are discovered this early. Buirge, in reporting a series of 135 cases at the University of Minnesota, found in 75 per cent the growth entirely surrounded the rectum; in 15.4 per cent one half of the circumference was involved, and in 9.6 per cent one quarter the circumference was involved. It is estimated one or two years must elapse before a carcinoma will completely surround the rectum, so it is evident how long symptoms must have been present before diagnosis was made. In 50 per cent of these cases, diagnosis was not made by the original attending physician. In well developed cases, presumptive diagnosis of carcinoma can be made by digital and proctoscopic examination. It is only in rare instances that a tumor which is clinically cancer, turns out otherwise, though a biopsy of the tumor and microscopic examination should precede operation. I emphasize biopsy of the tumor for not too infrequently the surgeon removes a projecting mucosal tag and misses the tumor entirely. The pathologist is entitled to a good-sized piece of the tumor itself—not a timid mucosal nibble. The bleeding which usually occurs following the removal of an adequate biopsy is easily controlled by electro-coagulation. X-ray is still used by some physicians as a method of examination in suspected rectal carcinoma. This should be unqualifiedly condemned. The use of the x-ray upon an organ which can be completely visualized through a proctoscope, is without rhyme or reason. Small carcinomas will never show on an x-ray, and even quite large ones are frequently overlooked. Only with large obstructive growths can an abnormality be discovered. While x-ray is our best method of diagnosis in colonic carcinoma, in rectal carcinoma it is a positive menace.

Factors influencing operability are several. Aside from the physical condition of the patient, these have to do with the size, fixation, and local spread of the growth, the presence of absence of metastatic involvement, and the degree of malignancy of the tumor. Operability seems to vary with the experience of the surgeon, ranging from 30 to 70 per cent. With the occasional operator, the percentage is low—with the surgeon especially experienced in this particular field, the operability high. For example, operability at the Mayo Clinic is approximately 70 per cent, the Lahay Clinic 70 per cent, Rankin 71 per cent, Stone 67.6 per cent, T. E. Jones 68 per cent. In determining the percentage of operability, it must also be determmined whether operation is for palliation or cure. Local fixation rather than the size of the tumor, is more important as to operability. In many instances fixation may be due to inflammation rather than to actual tumor invasion. It is not always possible to determine which is the case at the time of examination. Following a preliminary colostomy, inflammatory fixation will usually loosen, but fixation due to tumor invasion will continue. If actual invasion of the seminal vessels, prostate, urethra, bladder or other adjacent organs has occurred the outlook is defintely poor, both because total removal is difficult or impossible, and because in most instances distant metastases have already occurred. The liver, regional nodes, lungs, and pararectal nodes are the most common sites of metastases. X-rays of the chest and spine are advisable in all cases before operation.

Dukes and Gabriel demonstrated the presence of metastatic lymph nodes in 62 per cent of cases of cancer of the rectum operated upon at St. Mark's Hospital. Gilchrist and David found positive nodes in 70 per cent of their series of cases. However, the mere presence of enlarged nodes does not indicate cancer. Of 337 nodes examined by Dukes and Gabriel which were thought to be cancerous, only 132 were actually malignant. In 950 nodes thought to be benign, 18 contained cancer. The presence of a few metastases in the glands or liver, does not necessarily contraindicate radical operation. These patients may often live several years. If the growth is operable locally, the patient is often made more comfortable by its removal. Allowing a sloughing and infected tumor to remain to invade the prostate, bladder or other adjacent organs, means a certain, slow, agonizing death for the patient.

The degree of malignancy is of some value in determining the type of operation to advise, and also in determining the prognonsis. There is some difference of opinion as to how accurate such grading may be, but it has been a satisfaction to me, even if it is only to decide whether it is a rapidly or slowly growing tumor, and the extent of invasion. By combining information obtained from both the Broders and Dukes method of classification, I have always felt I knew something more of the situation than would be possible otherwise. In Dukes classification, he includes only those tumors which are advanced enough to have invaded the muscular layer of the bowel wall. I think the prognosis would be still more accurate if a fourth group were added—those which are still limited to the mucosa.

Perhaps the greater cause of reduction in operative mortality of cancer of the rectum, is improvement in pre-operative preparation and postoperative care of the patient. This has been brought about by the great progress made in the studies of body chemistry. The day when a surgeon would send an anemic, dehydrated patient into the hospital and operate the next day is passed. In most cases five or ten days or even more, are needed for preparation. Many of the patient are anemic, have a low serum protein, and are depleted in minerals, vitamins, and sugar. Frequent transfusions, blood plasma, intravenous sugar and vitamins, will usually completely change the patient's general condition in just a few days. Cardiac and urinary condi-

tions should be carefully investigated, and appropriate treatment instituted where indicated. Obstruction is a most important complication, but contrary to colon cancers, obstruction in rectal carcinoma is infrequent. Obstruction in rectal cancer can usually be relieved by passing a catheter through the lumen of the growth. If this is impossible, an opening can usually be made through the tumor mass by fulguration or electro coagulation.

Many details make up the proper postoperative care of the patient, but a few are of greatest importance. Transfusions probably come first, both for combatting shock and promoting rapid uneventful convalescence. Operative blood loss is often more than the physician realizes, and in abdominoperineal cases there is a considerable postoperative ooze of blood and serum from the posterior wound. A transfusion of 1,000 c.c. of blood and/or serum during and immediately following abdominoperineal resection is a minimum requirement. An additional 500 c.c. on the following day is advisable, and still another 500 c.c. on the third postoperative day will do much to improve the patient's condition. Perienteric fluids are essential as long as nasal suction is continued. These must not be in too great quantities, particularly in elderly people. The first twenty-four hours we usually give 2,000 c.c. of Beclysl, 5 per cent glucose in isotonic Na Cl Sol and Thiamine hydrochloride 3 mg., Riboflavin 3 mg., Nicotin 25 gm. (per 1,000 c.c.) intravenously and 1,000 c.c. of normal saline subcutaneously. This amount is varied with conditions. In general, an amount of fluid intake which will cause the patient to excrete 800 c.c. of urine in twenty-four hours is sufficient.

Where the colostomy stoma is obstructed with a clamp, the Wangensteen type of nasal suction is of prime importance, and we feel it to be of value even in cases of simple-loop colostomy. In abdominoperineal resection, distention causes the patient great discomfort, increases the permeability of the bowel wall and may embarrass the circulation in the colonic stump to the point of causing necrosis and perforation. Much of this distention is caused by swallowed air and gas in the small intestines. Once it has passed beyond the ileocecal valve (if competent) it often cannot be syphoned back. Therefore we insert the tube preceding the operation, with the idea of preventing distention, rather than trying to relieve it after it has occurred. To be certain that no serious colonic distention may occur, the obstructed end of the bowel is invariably punctured with the cautery at the end of twenty-four hours. An indwelling catheter may be inserted at the time of operation, but since with nasal suction little if any disention will occur within twenty-four hours, it has seemed simpler to us to puncture the bowel the next morning after the wound is sealed off, rather than to Weitzel in a catheter at the time of operation.

Frequent turning of the patient with active and passive motion of the extremities, may be of value in preventing stasis and thrombosis formation. This in addition to deep breathing exercises and/or hyperventilation reduces stasis, and the frequency of lung collapse and pneumonia. Urinary complications are perhaps the most troublesome postoperative complications, particularly in males. Injury to the enervation of the bladder and often some degree of prostate enlargement, makes difficulty in emptying the bladder and some degree of cystitis frequent. Though troublesome, this is usually not serious unless a pyelonephritis develops. In males we leave an indwelling catheter in place for seven or eight days, changing it once or twice during this period. The catheter is attached to a bottle with continuous drainage so the bladder is kept continuously contracted. After this period we find the patient much better able to void and with less residual urine than if he had been catheterized periodically.

Another valuable agent, particularly in elderly persons with some cardiac damage, is the free use of oxygen. Some rise in temperature with an accompanying rise in pulse rate is usual. This means extra work for the damaged heart. Oxygen reduces the pulse rate and gives that organ a rest.

The choice of anesthesia varies with the individual, but in general I prefer spinal anesthesia, as do the majority of men doing a large amount of this work. It may be supplemented by small doses of intravenous sodium pentothal, if the patient is nervous or has any discomfort. Either pontocaine, pontocaine and glucose, or nupercaine solution, will give long enough anesthesia to complete the average abdominoperineal resection. Catell states the case of spinal anesthesia in these words, "It gives complete muscular relaxation; easy exposure of the site of operation, reduces intestinal manipulation to the minimum, and renders the closure of the wound easy."

In considering the type of operative procedure in so far as cure is concerned, operations may be divided into those which have to do with local removal or destruction of the growth and those involving more radical procedures. The first group is a small but very definite one. We have no right to subject the patient to a serious operation and a permanent colostomy, where a slighter and less dangerous operation would suffice. On the other hand the patient always prefers a procedure which involves less stay in the hospital and the avoidance of a colostomy. For this reason the surgeon must have some definite criterion upon which to base his decision as to the type of operation, and then to insist on radical operation where he deems it necessary, regardless of the plea of the patient. The statement of T. H. Jones, that the surgeon who does "little operations for little cancers and big operations for big cancers, never cures any," is worth remembering. I have developed a definite opinion as to the criterion for advising local treatment for rectal cancer and if the patient does not concur in this opinion, he does so at his own risk.

Small carcinomas which have a strap-like mucosal pedicle are suitable for local removal or fulguration. If the pedicle is short and thick, but with no induration which often indicates carcinomatous infiltration, it may be removed locally, together with a generous portion of the entire thickness of the bowel wall adjacent to the tumor. The pedicle and bowel wall is carefully examined microscopically for carcinoma. If cancer is present, radical operation is performed. In the case of small flat unpedunculated tumors, it is nec-

essary to be even more cautious in recommending local destruction or removal. These are usually of high-grade malignancy, and invasion of the bowel wall occurs early. If the growth is attached only to the mucosa, the mucosa where the growth is attached can be freely moved about on the underlying muscular layer, the growth can be destroyed locally. If the tumor is attached to the subcutaneous or muscular coats of the bowel, there will be a fixation at the point which precludes any mucosal movement. In this case radical operation is advisable. It is seldom that such a tumor is movable after necrosis has occurred, and this usually occurs by the time the tumor is 1.5 cm. in diameter. It means that tumors of this type are seldom seen early enough for local destruction, unless they are discovered in the course of routine proctoscopic examination. If they are advanced enough to produce symptoms, i.e., necrosis with bleeding and/or mucus, radical operation is indicated. In the case of more advanced lesions, it must be decided whether the operation is for palliation or is an attempt to secure a permanent cure. If a permanent cure is sought, the most radical operation compatible with a reasonable mortality, is the most advisable.

I believe the best treatment for radical cure of rectal carcinoma is based on the original operation by W. E. Miles. This is the one-stage abdominoperineal removal. With few exceptions any deviation from this method, is only advisable because the procedure is too hazardous. Age is no contraindication to the one-stage procedure. Many persons at 75 are a better surgical risk, than others at 60. Furthermore, elderly persons will usually stand one major operative procedure better than two in fairly close succession. Marked obesity is an unfavorable factor. Cardiac, urinary, diabetic, and other systemic diseases, unless of severe grade, are not as important as formerly thought. If cared for properly the patient will usually go through the surgical procedure without much trouble. As has been pointed out, secondary conditions such as anemia, dehydration, etc., are of little significance, since a few days of intravenous therapy will bring the patient back to normal. No patient should be subjected to an abdominoperineal procedure with unrelieved bowel obstruction. In rectal cancer, contrary to the case of colon malignancy, serious obstruction is rare in patients with operable tumors. If obstruction is present, it can usually be relieved by passing a catheter through the growth via the proctoscope. If this is impossible, a channel can often be fulgurated through the center of the tumor mass. In general, of patients suitable for radical operation, the one-stage abdominoperineal method can be employed in approximately 80 per cent.

With present technique of improving the patient's general health, I think there is less and less need for the two-stage abdominoperineal procedure of Lahay, or the perioabdominal procedure of Bartlett and Rankin. In the case of large fixed tumors, it is often impossible to decide whether the fixation is due to invasion of adjacent structures or merely to inflammatory reaction. In these cases the Lahay procedure has some advantages. The first stage of the Lahay operation to all practical purposes is a double-barrel colostomy. If the tumor remains fixed and further operative procedure seems inadvisable, the patient still has a serviceable palliative colostomy. On the other hand, if the growth does shrink and becomes movable, the surgeon can complete the radical abdominoperineal procedure, rather than having to be content with a posterior resection as he would if he had done the usual loop colostomy. In a few patients because of severe physical impairments or extreme age, a simple loop colostomy followed by a posterior resection may be advisable. The method should not be forgotten in dealing with rectal malignancy, but its use should be restricted to relatively few cases.

Lately there has been a revival and extension of former operative procedures in rectal cancer with the idea of avoiding a colostomy. If the growth can be resected and an anastomosis made without greater chance of recurrence of the tumor or a greater operative risk, this is very desirable. It is my opinion that these two requirements can be fulfilled only in a very small group of patients, and the use of this method must be limited to a very small percentage of cases. Since all patients wish to avoid a colostomy, the surgeon may be tempted to extend the use of this operation to cases where it is not really advisable.

Perineal excision of rectal cancer is in my opinion seldom advisable. Even though the growth is small and low in the rectum if the sphincters are to be sacrificed, a colostomy is advisable. Lynch and Hamilton have been very enthusiastic about perineal excision without a colostomy and the bowel control which results with this operation. Babcock also advocates what he terms a perineal colostomy. He has even transplanted a number of abdominal colostomies to the perineal region to the satisfaction of the patient. I believe the "satisfaction" of these patients is created by the enthusiasm of the surgeon. After observing both types of bowel outlets, I am thoroughly convinced that a midline abdominal colostomy is more cleanly and more easily cared for than a sphincterless opening in the perineum.

The final question is that of palliation. In some patients where there are metastases in the liver, lungs, or lymph nodes, the growth is still easily resectable locally. In these cases life will often be prolonged and the patient be made more comfortable by the removal of the growth, rather than by allowing it to remain to invade the bladder and other adjacent organs. Unless undue surgical risk is involved, the local removal of such a growth should always be given serious consideration. Where the growth is so extensive it cannot be removed locally, several procedures are of value. Partial destruction of the tumor mass by fulguration and/or coagulation will often lessen the rectal tenesmus, and discharge of mucus and other irritating material. Preceded by colostomy this is probably the best method of palliation. As the tumor invades adjacent structures the use of opiates is the only treatment which will give relief. In a few cases, deep x-ray treatment with very extensive doses will cause a marked secession of the tumor and a reduction in pain, but without exception in my experience, the benefits achieved have been very

temporary in character. In some instances small non-therapeutic x-ray exposures are of psychological value.

My personal experience with radium is limited. It does not cure cancer of the rectum, other than small lesions which may also be cured by excision or coagulation. In these cases there is no advantage in resorting to radium. Its greatest field therefore is limited to palliation. I have seen a considerable number of cases where radium has been applied elsewhere. It is only fair to say that these patients were those who had not reacted favorably. Those who had a favorable result had no reason to consult a physician. In this group are also included those with a factitial proctitis from radium applied to the cervix. Without exception these patients have given a history of distressing reactions of months duration. No doubt radium has a place in the treatment of this condition, but I do believe its value has been over-emphasized and many patients are made more miserable by its use. There is no question but that it should be used only by those who work with it daily, thoroughly understand its application and know its dangers.

In conclusion I wish to briefly summarize the operative procedure and operative mortality of the last 100 cases seen by Doctor Anderson and myself. These cases extend over a four-year period. The oldest patient in this group was ninety-one years and the youngest thirty-one—the average age being 63.9. By decades, there were five who were in the third decade, fourteen in the fourth, twenty-two in the fifth, thirty-seven in the sixth, eighteen in the seventh, three in the eighth, and one over ninety years. Seventy-five of these patients were subjected to operative procedures which preoperatively we thought might lead to a permanent cure, though some of these proved to be inoperable when they came to operation. Nineteen were subject to palliative procedure, and in six no operative procedure was deemed advisable. Fifty-seven of this series had one-stage abdominoperineal resections. One had a two-stage Lahay abdominoperineal resection; five had a colostomy followed later by a posterior resection; four had a Lynch operation or perineal resection without colostomy, though one of these patients subsequently had a colostomy done; one had a local resection by the Harrison Cripps method; four had fulguration and coagulation; three had local surgical removal; nineteen had palliative operative procedures (these were colostomy, 14; fulguration and coagulation, 3; local surgical removal, 2; and cecostomy, one). These with the six inoperable cases make up the series of one hundred. There were five hospital deaths. Three were in the fifty-seven abdominoperineal resections—an operative mortality of 5.25 per cent. One was from a cerebral accident and one from coronary occlusion. The third was considered a perivascular collapse by a consultant. No autopsy could be obtained. One death due to embolus followed a local surgical removal, and one death due to coronary occlusion followed a simple colostomy.

As these statistics woud indicate our preference as to procedure is the one-stage abdominoperineal operation. The youngest in this group was thirty-eight years old, and the oldest seventy-seven years. The average age was fifty-seven years. The average age for the entire group was somewhat greater (63.9 years), which would indicate that to a certain extent, the younger better-risk patients were selected for this operation. This group of patients was seen over a four-year period, but the only essential changes in their disposition if seen today, would be an increase in the number of one-stage abdominoperineal procedures, and the practical elimination of perineal excision without colostomy.

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Discussion

DR. H. B. ZIMMERMANN, Saint Paul: I do not know whether or not Dr. Fansler intended to include growths of the rectosigmoid junction in this paper. Lesions in this region can cause obstruction. I am quite sure the procedure he suggested, that of passing a tube through the obstructed portion, is extremely hazardous, and I know I would hesitate to burn a hole through such a lesion, with a coagulating current. I would think it much safer in high lesions of the rectum or low ones in the sigmoid to make a preliminary colostomy, either in the right or transverse colon.

DR. H. E. HULLSIEK, Saint Paul: I would like to say a few words on the subject of colostomy. I venture to say if we took a vote of this society and asked each one what he would do if he had carcinoma of the rectum, about 60 to 70 per cent would do nothing about it because of the feeling against colostomy. When I was in Detroit with Dr. Hirschman he took such a vote among the students, who voted almost 100 per cent that they would go without operation rather than have a colostomy. I think this attitude is one of the greatest deterrents to operative cure. The family physician, who usually sees these patients first, refers them to someone else, and the former is usually against a permanent colostomy because of what he thinks and has seen in the past. I don't think it is fair for the doctor to decide for the patient with carcinoma of the rectum: a person who has one is an entirely different person when he knows he has a carcinoma from what he was before, or from the normal individual. When he suddenly finds out he has a carcinoma he has an entirely different outlook on life. He knows he is going to die a slow death from bleeding, sepsis and obstruction. Therefore one must remember, when advising a patient what to do, to try to put oneself in that patient's place. It is a question of whether one would rather *live* after a mutilating operation, or *die* a slow, agonizing death. Sometime this winter I (with Dr. Zimmermann) am going to get half a dozen or more people who have had this operation and are quite happy, and bring them before a staff meeting to try to prove to the men that a patient can have a mutilating operation and have functions changed and still have a pretty good time. I think an important point is the changing of the dismal, indifferent outlook of many physicians as to the treatment of these people. I operated on a man in 1937 who was forty years old. He was in my office last week. He has had a permanent colostomy for six years and said last week that he was happier than he had ever been in his life. I have a woman who was operated on three years ago who has adjusted herself completely. Dr. Zimmermann has a minister who is still preaching in his pulpit. In spite of all that, there are many of you and many I know of, who, if they had a carcinoma of the rectum, would take about 10 grains of morphine and be through. I am trying to prove there is a worth-while future for these people and that there is something better than dying a slow death of sepsis and obstruction.

DR. R. T. LA VAKE, Minneapolis: This thesis has been most interesting.

As success in the treatment of malignancy depends largely upon early diagnosis, it behooves us all not to omit a digital examination of the rectum whenever we make a pelvic examination. Dr. Fansler emphasized this many years ago. Strangely, but fortunately, I have never picked up a malignancy of the lower bowel by digital examination. However, many other lesions have manifested themselves that were unsuspected and needed treatment.

Dr. Fansler has stressed preoperative preparation. Would that this admonition were more generally followed in all major operations. It is surprising how many people are operated upon without any thought of preoperative rest in bed, hydration, or high carbohydrate intake to fill the liver with glycogen; and, even when indicated, without transfusions to build up hemoglobin and serum content. Where preoperative preparation obtains, I am confident that the postoperative course is much easier.

Dr. Fansler's remarks as regards the superiority of the one-stage operations were instructive. A few years ago, Dr. Wayne Babcock, whom Dr. Fansler mentioned, showed me several of his postoperative cases and seemed to draw similar conclusions to those of this thesis.

Now a word concerning Dr. Hullsiek's discussion regarding colostomy. His attitude bears out my conclusion after following the course of one of my best friends, who, following radium treatment of carcinoma of the cervix, developed a complete bowel obstruction. At operation, the surgeon could not determine whether the obstruction was due to the extension of malignancy or to inflammation. At any rate, nothing could be done but a colostomy. With this she lived a happy useful life for twelve years, and died a cardiac death.

DR. M. W. ALBERTS, Saint Paul: Relative to the symptomatology, carcinoma of the rectum has always been characterized by the absolute absence of pain, and so it is with a great deal of surprise in reviewing the cases of rectal carcinoma at the Ancker Hospital a few years ago that about 50 per cent gave as one of their admitting complaints definite pain. When we analyzed these cases further, it was found that about 50 per cent of the cases were inoperable, and it was this group that gave the history of pain. May we conclude from this small series of cases that pain in rectal carcinoma should make us suspicious of the fact that the lesion may be inoperable.

I, too, believe that classification of the growth is extremely important and certainly helpful in guiding us with the prognosis, but such a classification must be done by one thoroughly versed in such a procedure. As an example, some years ago I operated upon a man with an obstructive lesion of the transverse colon; this was resected and the gross appearance led one to assume that it was a large polyp. The pathological diagnosis was a Grade 1 carcinoma and yet within three and one-half months this man died with extensive retroperitoneal and regional metastases.

Dr. Fansler did not go into the differential diagnosis and although digital and proctoscopic examination is sufficient to diagnose correctly a great majority of these lesions, biopsy is often imperative to arrive at the correct diagnosis. Certain inflammatory conditions often found in the rectum associated with such diseases as amebic dysentery, endometriosis, et cetera, require biopsy.

DR. JAMES JOHNSON, Minneapolis: Regardless of what our expressions may have been here tonight, we must confess that carcinoma is a pretty uncomfortable dis-

ease at best. Unfortunately, when it is in the rectum, it becomes an added burden because of the colostomy.

It is certainly uncomfortable news and often quite a shock for a patient to be told that he has a cancer. It is not necessary to break the news in a blunt fashion, but it should be done rather gradually, and one should spend some time with them in discussing the brighter side of the picture until they develop the philosophy that enables them to carry on a "carcinoma life." At first, every distant ache and pain is often interpreted as being due to a spreading carcinoma. All these popular ideas must be dispelled and much can be done to put them in a state of mind that enables them to continue a happy and optimistic existence.

DR. PHILIP F. DONOHUE, Saint Paul: That posterior resection of the rectum for carcinoma may cause postoperative retention of urine in the male has been repeatedly observed. The condition occurs when dissection of the rectum and sigmoid from the muscular and fascial structures of the pelvis interferes with the innervation of the bladder through injury to the parasympathetic nerve fibers or to the hypogastric plexus itself. The result is impairment of tone and force of the detrusor muscle of the bladder. In most of the cases, the degree of urinary retention increases and may lead to complete inability to void. Cystoscopic examination usually shows nothing more than slight or moderate intraurethral intrusion of the prostate, a condition which had caused little or no urinary difficulty before operation. Following resection of the rectum and disturbance of the parasympathetic nerves, this degree of prostatic enlargement assumes clinical importance because it is sufficient to produce resistance to the impaired force of the detrusor muscle, causing urinary obstruction. Relief of the obstruction may be expected to follow transurethral resection of the enlarged prostate. My experience with this complication in three cases has caused me to wonder if the surgical procedure of dissection of the rectum from the pelvic structures might not be altered so as to avoid injury to the bladder nerves.

DR. FANSLER, in closing: First, I wish to thank all the discussors for their kindly reception of this paper. Several brought out in their remarks that most patients are fearful of a colostomy; but, the fact is that a colostomy, if properly cared for, causes little inconvenience. Dr. Hullsiek and Dr. Zimmermann say they often have a patient who has a colostomy talk to a patient who is confronted with a similar necessity. I, too, have found this advantageous. In cases of obstruction, a soft rubber catheter can often be passed through the growth (either rectal or sigmoid), and thus eliminate the necessity of a preliminary colostomy. Likewise, in some instances a small opening may be made through the growth by electro coagulation or fulguration. I had hoped Dr. James Johnson would say something on this subject, since he presented an early paper on this method.

Dr. Alberts mentioned the fact that a large percentage of patients with cancer of the rectum have pain, contrary to a popular conception. This has also been my experience in well-developed cancer. Early cancer is not painful unless the anal canal is involved. Since, however, the majority of cancers we see are well developed, the majority do have discomfort.

Endometriosis does sometimes invade the rectum, become ulcerated, and simulate carcinoma. I have noted that most growths which are extrarectal in origin, give me that impression even though they have ulcerated through the rectal wall. Absolute diagnosis, however, must depend upon biopsy.

Dr. Donohue has mentioned urinary retention. I think it is agreed that primarily this is due to injury to the bladder innervation; or, in the male, to enlargement of the prostate. I think its continuance is often due to the surgeon allowing the bladder to become greatly over-distended postoperatively, which breaks down the musculature of the bladder wall.

The meeting adjourned.

A. G. SCHULZE, M.D.
Acting Secretary.

INTERNATIONAL HEALTH

Postwar international coöperation is already getting under way in the field of health protection.

Signs of action along this line as well as intense desire for all nations to work together to protect the health of all people everywhere appeared in statements from the health directors of Great Britain, the Soviet Union, China, Egypt, Australia and seven Latin American countries to the wartime conference of the American Public Health Association in New York.

"The special problem of the present and the future is malaria and I can assure you that the Governments of our two peoples have completely interlocked their plans for dealing with this terrible menace," the Right Honorable Ernest Brown, Britain's Minister of Health, declared.

Large scale plans being made "by our Governments acting in concert" for postwar relief of peoples being freed of Naxi tyranny cited by Mr. Brown give further evidence that postwar international coöperation in health protection is reaching the action stage.

"Let the Pan-American ideal, the greatest of the ideals of America, be not alone a political and economic ideal, but be also an ideal of life and vigor," Mexico urged through Dr. Victor Fernandez Manero, director of the Department of Public Health.

"Just as we are fighting this war for global security, so we must work together for global health," Dr. Wei Tao-Ming, Chinese Ambassador to the United States, declared.

This theme appeared also in the statement from Prof. Vladimir Lebedenko, representative of the Soviet Red Cross and Red Crescent of the U. S. S. R. who said, in part, that erasing "the horrible ravages of war" must be done "not by one people but by all together, in unity for the betterment of life and for the future of all mankind."

Dr. Guillermo Garcia de Paredes, Director of Health for Panama; Jules Thebaud, Director General of Haiti; Dr. Albert Recio, Director of Health and Social Welfare for Cuba, also urged greater international cooperation in health protection.——*Science News Letter*, December 25, 1943.

Minneapolis Surgical Society

Meeting of November 4, 1943

President, H. O. McPheeters, M.D., in the Chair

Secretary, John M. Feeney, M.D.

A TECHNIQUE FOR TRANSURETHRAL RESECTION OF THE PROSTATE

C. D. CREEVY, M.D.

Minneapolis, Minnesota

A steady growth of interest in the surgical relief of prostatism has paralleled the equally steady increase in longevity which has produced so many economic problems and so much governmental controversy. The average age of the patient who seeks operation for prostatism at the University Hospital is sixty-nine years. The number of males living past the age of sixty-five in the United States doubled between 1911 and 1935, and longevity has increased considerably since that time. Similarly the number of operations upon the prostate at the University Hospital increased from twenty-five in 1928 to 264 in 1942. Obviously this has resulted both from the fact that an increasing number of men has survived into the prostatic age, and to a greater readiness on their part to submit to operation.

The first attempts at surgical relief of prostatism were made long ago, but reasonable success and comparative safety are rather recent developments. Some forty years intervened between Billroth's first piecemeal removal of the prostate through the perineum, and Young's refinement of the perineal enucleation of the gland around 1900. Probably because Freyer's success with suprapubic enucleation occurred at about this same time, there grew up a rivalry between the "perineal" and the "suprapubic" operators.

These two approaches had been perfected considerably before anyone had the temerity to advocate a wide application of the closed or transurethral operation which, however, really antedated the others. Guthrie attempted to incise the contracted prostate in 1834 with a sort of urethrotome and Mercier and Civiale shortly thereafter devised cutting instruments for the same purpose. Bottini (1877) invented a cautery for incision of the prostate through the urethra, but the results of all were bad, presumably because the operations were done blindly. Freudenberg in 1900 and Wishard in 1902 devised instruments to permit transurethral cautery incisions under vision, but the reflected light which was used was inadequate, and they abandoned them in favor of the recently perfected open operations.

Young devised the punch which was the real forerunner of the modern resectoscopes in 1909, but advocated its use only for contracted glands. He, too, was handicapped by the use of reflected light which made visualization of the prostate very poor. In 1920 Caulk devised a similar instrument which used a cylindrical cautery instead of a tubular knife, thus lessening the danger of hemorrhage (while increasing that of sepsis), but his system of visualization was that of Young. However, he was the first to advocate the punch operation in actual enlargement of the gland, and he aroused the interest of others in the method and so stimulated the development of the modern punches of Braasch and Bumpus, Thompson, McCarthy, and Foley. With any of these instruments large amounts of tissue may be removed under direct vision with relatively little risk by the surgeon who has sufficient skill.

In the meantime, Maxmillian Stern devised the first resectoscope which utilized a wire loop to remove tissue with undamped or cutting current from a high frequency or surgical diathermy machine. The loop was too small and fragile, and satisfactory means of controlling hemorrhage were lacking. His primitive instrument was made really practical by T. M. Davis and later was further improved by McCarthy. The use of the Stern-McCarthy resectoscope was popularized by Alcock. All three of these men had the advantage of improved diathermy machines which supplied damped current for the control of hemorrhage by electro-coagulation.

It remained for Nesbit in 1939 to demonstrate the importance of an instrument which could be manipulated with one hand, leaving the other free to push (with a forefinger in the rectum) parts of the gland forward to facilitate their excision, and to judge by palpation the amount of tissue remaining. This was a most important step in the transition between the early attempts to "cut a channel" through the obstructing prostate, and the present-day effort to excise all or nearly all of the abnormal tissue, so that one may with some propriety speak of "transurethral prostatectomy."

Indications for Operation

The indications for surgical removal of obstructing prostatic tissue are fairly clear, and depend upon two factors: the degree of retention of urine, and the severity of symptoms. In general, the existence of persistent or frequently recurring complete retention definitely requires operation, while the presence of an incomplete retention with sufficient residual urine to threaten the integrity of the kidneys is another concrete indication for surgery. On the other hand, serious subjective difficulty in emptying the bladder may demand relief in the absence of any great amount of residual urine.

So much may be conceded. It is upon the type of

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operation to be done that sharp differences of opinion develop, and often lead to acrimonious disputes simply because it seems to be human nature to try to make the other fellow see things your way and to employ only your favorite operation. There are, however, several indications for the transurethral as compared to the open operations, upon which agreement is general. These include contracture of the prostate, and carcinoma with local extension or metastasis which makes cure impossible. A third indication is the small obstructing benign hypertrophy. For the experienced resectionist, the configuration of the gland (apart from its size) is not important.

Differences of opinion develop when one attempts to define a "small" benign hypertrophy, and become extreme when the selection of an operation for the large gland comes up. In this connection it should be understood, as Foley has pointed out, that each surgeon must determine for himself what degree of enlargement makes it unwise for him to undertake transurethral resection because it will take too long and thus lead to excessive blood loss, shock, high mortality, and repeated operations. It is foolish to deny that differences in skill make for considerable variation among surgeons in the proper application of transurethral resection. If X can remove 150 grams in an hour with safety and a good result, shall I, if I cannot do as well, demand that he abandon the operation in favor of enucleation?

Dr. Young frequently inveighs against the transurethral operation because it may fail to cure a carcinoma concealed within a spheroid of benign hypertrophy, while enucleation may succeed. Since "cures" in these hidden carcinomas discovered in enucleated specimens by the pathologist average less than 25 per cent even when the follow-up period is but two to five years, and since concealed cancers are found in but 8 per cent of benign hypertrophies, the universal substitution of resection for enucleation would involve the theoretical loss of a 2 per cent chance to cure concealed carcinoma of the prostate. This 2 per cent chance is more than compensated by the lower mortality of the closed operation.

Transurethral resection has become popular because, in good hands, the mortality is low, hospitalization is short, and there is no painful open incision through which urine must drain for a time after operation. All of these factors favor the closed as against the open operation. There is, however, no more warrant for saying that there is no risk or that the results are invariably perfect, than there is for saying these things about any other major surgical operation, least of all about enucleation of the prostate. The beginner will do many incomplete operations, and even the experienced surgeon will have occasion to apologize for unexpected bad results but, in my opinion, transurethral resection is indicated in most obstructing prostates which need operation. The three contraindications which I recognize include ankylosis of one or both hips in a position preventing access to the gland by this route, a gland so large as to make the operation too hazardous, and a carcinoma so localized as to offer a chance of cure by radical perineal prostatectomy.

Technique

Anesthesia.—Spinal anesthesia is most satisfactory for the average patient because of its safety and the relaxation of the field which it alone affords. It may well be supplemented by pentothal in the apprehensive patient, or replaced by it when the gland is small.

Instruments.—The armamentarium needed is rather elaborate. First is a good, reliable surgical diathermy machine which generates its cutting current with a vacuum tube and its coagulating current by a spark gap (Burdick, Wappler). A machine intended to generate both types of current from a single type of generator gives a current which is adequate for one purpose but inadequate for the other. Second is a resectoscope which can be operated smoothly and easily with one hand. At least one spare telescope (and preferably a whole spare instrument) must be at hand to guard against failures of equipment. Nesbit's instrument as supplied to him is an excellent one, but I have been unable to secure one which works smoothly and without jerking. Hence I have had constructed in the Apparatus Shop at the University a modification of the Stern-McCarthy instrument which is used almost precisely as is Nesbit's. Mr. John Phelan and his associates are responsible both for the design and for the construction of the instrument. In my own experience, attempts to carry out complete resection without the use of a finger in the rectum have been unsatisfactory, a good deal of tissue being overlooked posteriorly; hence a "two-handed" instrument such as the Stern-McCarthy is to be avoided.

Contamination of the rectal finger is prevented by use of the O'Conor sheath. The urethra is lubricated by the injection into it of K-Y jelly, and sounds up to 30 French are passed. If this discloses any tightness in the urethra, an urethrotomy is made behind the constriction, and the resectoscope inserted through it. To do otherwise is to insure periurethritis and postoperative strictures. If the narrowing is too far back to permit its short circuiting by an urethrotomy, resection should not be done.

After an inspection of the prostatic urethra and bladder so painstaking that one memorizes the configuration of that particular gland, the technique of Nesbit is followed in removing the obstructing tissue. The lateral lobes are freed from one another, and so allowed to drop posteriorly, by an initial excision of strips of tissue in the midline anteriorly, extending from the vesical aspect of the gland almost to the external sphincter. Beginning in front and following the curvature of the capsule, one then cuts a groove between the capsule and the lateral lobe so as to detach the lateral lobe on one side from the surgical capsule except posteriorly. Bleeding is controlled by electrocoagulation, and the maneuver is repeated on the opposite side, thus leaving the two lateral lobes partially devascularized and attached behind by a slender pedicle. Then, with a finger in the rectum pushing the remnants of the lateral lobes forward they are rapidly excised in a piecemeal fashion together with the median lobe, and bleeders are again controlled. It is important that no time be wasted in

repeated inspection of the field between cuts if a large gland is being resected. The operation is completed by excision of irregular fragments left behind by the original maneuvers, always with a finger in the rectum when one works in the posterior quadrant, both to push the remaining tissue forward, and to guard against cutting too deeply. When the gland is very long, it may be preferable not to try to cut the whole length at one stroke, but to work at two or three different vertical levels in succeeding phases of the operation.

Figure 1. Large stone in bladder associated with small benign hypertrophy of prostate.

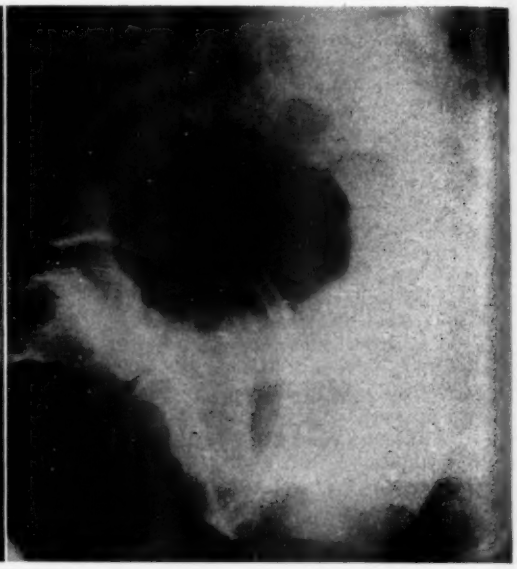

Figure 2. Man, sixty-two years old, in good general condition. Hypertrophic prostate of 138 grams enucleated suprapubically with primary closure of the bladder. Catheter removed in eleven days; patient went home to country in thirteen days.

Pieces of prostate and blood clots are evacuated with a special syringe, remaining bleeding points are coagulated, and a Foley bag of proper size is inserted, then partly inflated and drawn down into the prostatic cavity, where it is distended to compress oozing surfaces. It is indispensable when glands of any size are resected.

Since excessive loss of blood is at once the greatest obstacle to a complete operation and the greatest hazard to the patient, all of the irrigating fluid used during the operation is saved in a large galvanized can, and the blood in it is measured by the method of Nesbit and Conger. If the amount lost is excessive for that patient, it is replaced at once by plasma or whole, citrated blood.

The Foley bag is connected to a closed, sterile irrigating system utilizing the Baumrucker clamp, and irrigations are carried out at gradually lengthening intervals (every few minutes at first). In the absence of complications, the patient is allowed up in a chair on the following day, but the catheter is not removed until the third day. If he does not empty his bladder comfortably, the catheter is reinserted and, if the surgeon has any doubt whatever as to the completeness of the operation, it is repeated five to seven days after the first session. The average patient leaves the hospital on the seventh postoperative day, supplied with a typewritten instruction sheet concerning limitation of activities and consultation with his local physician.

It is impossible to overemphasize the importance of a trained, alert staff during the immediate postoperative period, since plugging of the catheter or an overlooked drop in blood pressure may result disastrously.

Using these methods, it has been possible to resect, with reasonable safety, as much as 199 grams of tissue at one sitting, and as much as 250 grams at two, although I am not prepared to claim that such large glands should be treated in this manner, nor that it is by any means always feasible to do so. It may be entirely impracticable, owing to vascularity of the gland and to the height of the blood pressure, to make a satisfactory one-stage resection in a gland much smaller than this, but I do believe that the urologist can find plenty of precedent among the general surgeons for seeking to extend the field of a particular operation, and need not apologize for doing so himself.

Discussion

DR. THEODORE H. SWEETSER: As Dr. Creevy says, each of us must appreciate his own limitations at any particular time and under particular circumstances. While I treat 80 or 90 per cent of my patients with prostatic obstruction by the transurethral methods, I try to consider each as an individual problem, and for me there

are still some indications for suprapubic and for perineal enucleation of the prostate.

For me it is easier, neater, and less risky to remove a large bladder calculus by cystotomy, to be followed by a transurethral or suprapubic removal of the causative

be wrung out into water and the blood loss quickly estimated.

Dr. Creevy mentioned pilocarpine as an aid in establishing voiding after resections. Prostigmine and physostigmine (eserine) are other similarly acting drugs which

Figure 3. Man, seventy years old, with dysuria, pyuria, leukocytosis, blood urea nitrogen of 111.1 mgms. per 100 c.c., and myocardial fibrosis. After cystography, the bladder was drained through a perineal urethrotomy by inlying catheter for eight days with resultant drop of the blood urea nitrogen level to 57 mgms. After preliminary transfusion, a perineal prostatectomy was performed (176.5 grams), and he went home, healed and voiding well without leakage, sixteen days after the operation.

Figure 4. Man, eighty-four years old, with acute urinary retention, pyuria, fever, leukocytosis, anemia, myocardial damage, and blood urea nitrogen of 57 mgms. After drainage by inlying catheter for eight days a perineal prostatectomy was performed (310 grams). He gained strength slowly and his moderate anemia and nitrogen retention persisted in spite of transfusions and even though he felt well when he went home.

prostatic obstruction, than it is to try to do the entire job transurethrally (Fig. 1).

Some large prostates, largely intravesical and in patients who are fair risks, may be removed suprapubically. If hemostasis is carefully secured by fulguration, the bladder may be closed tightly with two layers of sutures and drained through the urethra by a Foley bag catheter just as after the transurethral operation (Fig. 2).

Certain very old and feeble men with urinary infection, uremia and very large prostates seem to me to tolerate perineal prostatectomy better than transurethral resection in several stages (Figs. 3 and 4). With increasing experience in transurethral surgery I less often elect this procedure since it does entail some added risk of incontinence. Each case deserves an individual appraisal.

Since Dr. Davis of Omaha, lecturing here a year ago, complained of the drying and heating of KY in the urethra during resection, and since the representative of A.C.M.I. (manufacturers) more recently spoke of the electrical conductivity of KY and other water-soluble lubricants, I have returned to the use of mineral oil and vaseline as the lubricants for my resectoscope sheaths. I still prefer KY for other cystoscopic work.

We at St. Mary's Hospital are happy to support Dr. Creevy's statement of the value of the Nesbit-Conger method of estimating blood loss during resections. We feel that it should be applicable also to other surgical work; I believe that Dr. Kinsella has applied it to his chest surgery. Sponges used during any operation can I have found valuable for the same purpose. One must use them cautiously in patients suspected of coronary disease.

Pulmonary embolism is one complication which Dr. Creevy did not mention, and which I had thought had been practically banished from the field of transurethral prostatic surgery by our avoidance of recumbency and insistence on exercise. But I think that it must be remembered that such an accident can and still does occur occasionally.

Dr. Ernest L. Meland: This has been a very excellent and concise discussion of transurethral resection. Attention has been called to the fact that it is applicable to any type of obstruction at the vesical neck. The ability to resect transurethrally, large glands, is dependent upon the acquired skill of the individual and not upon any arbitrary standards that are laid down. The individual, who feels, because of his limitations, that the operation is applicable only to bars, contractures, small median lobe hypertrophies and carcinomas of the prostate will naturally select either suprapubic prostatectomy or perineal prostatectomy for the larger obstructions at the vesical neck. This is proper since the functional results attained in any operative procedure on the bladder neck depends upon the completeness with which the gland is removed. In those instances where residual urine remains or there are marked subjective symptoms following transurethral resections, it is necessary that a second stage be carried out in order to effect complete

removal of any remaining tissue. Various men have shown repeatedly that the gland can be removed quite completely down to the capsule, but that in the larger gland unless tissue is completely removed there will be devitalized areas which will be a cause of continuing pyuria and possibly recurrent bleeding at a later date. Flocks at the University of Iowa showed several years ago that this was the result of making these areas avascular by cutting off their blood supply.

The question often arises as to the permanence of the results following transurethral resection. Here too this depends upon the completeness of removal. Unfortunately when transurethral resection first became popularized many statements were made to the effect that removal of enough tissue to relieve the residual urine would result in shrinkage of the remaining portion of the prostate to the point where it would not give difficulty again. Unfortunately this has since proven untrue, since these patients develop recurrent retention with associated subjective symptoms and possibly a persistent pyuria necessitating reoperation at a later date. Those resections which were carried out in the early 1930's have not been attended with the good results compared with those that have been done in the last few years.

Attention should be called to the measurements of blood loss during an operation, since it is easy to overlook the actual volume of blood loss unless an attempt is made to measure it. In those instances where the loss is insignificant no importance attaches to it. However, in the larger vascular gland it is not uncommon to lose 500 to 700 c.c. of blood and an accurate measurement is made by checking the hematin value in the irrigating fluid and adequate replacement of blood bv transfusion can be made. Failure to replace the blood volume may lead to a persistently low blood pressure accompanied by oliguria and ending with uremia which if not corrected is often fatal.

Many of these patients without residual urine and without undue subjective symptoms will have a pyuria which will persist for several weeks following operation. Since the healing period is not complete until at least six weeks have elapsed, it is useless to give the patient any urinary antiseptics with the idea of hastening the healing process. Experience has shown that administration of one of the sulfonamide drugs in moderate dosages for a period of a week will often make the urine clear and microscopically free from pus when the medication is stopped eight weeks following operation.

DR. PHILIP F. DONOHUE (St. Paul): I also wish to congratulate Dr. Creevy on his most informative and complete presentation. This report shows that transurethral resection has come a long way since its introduction twelve or thirteen years ago and is ample proof that this method is now firmly established as an effective surgical procedure in the relief of bladder neck obstruction.

I would like to make a few remarks regarding the applicability of transurethral resection. In the first place I wish to say that I am a proponent of the operation and believe the method can be safely and successfully performed by the competent resectionist in any case of benign prostatic hypertrophy. It alone is the proper procedure for the relief of obstruction due to established carcinoma of the prostate and obstructions caused by inflammatory contracture of the vesical neck and median bar. A safe operation for the patient and a successful outcome will require a highly developed technique and will include the resection of an adequate amount of prostatic tissue but the avoidance of extravasation of urine which will occur when the aponeurotic sheath is perforated by carrying the resection too deeply. Proper technique will also include care and gentleness in instrumentation of the urethra in order to avoid urethral abscess and urethral stricture. In the majority of cases the obstruction is completely removed in one sitting, but in a small number of cases the removal of an adequate amount of tissue will require two stages and may call for resort to perineal urethrotomy to accomplish resection of unusual intravesical projections of the prostate. The aim of transurethral resection is to provide the patient with a large, free, urinary stream, complete emptying of the bladder, the return of normal interval between voidings, and clear urine. Complete emptying of the bladder and a satisfactory stream is obtained in practically every case and variable degrees of dysuria and pyuria may be expected in all cases for six to eight weeks which is the average period required for complete healing of the prostatic fossa. Sulfonamides are generally helpful in clearing the infection, but some patients continue to show cloudy urine and to experience urethral burning and nocturia. Cystoscopic examination may reveal the presence of intruding, devitalized prostatic tissue partially deprived of blood supply by the operation and by infection. Resection of this tissue may be expected to relieve the dysuria and to clear the urine; however, in a small number of cases the urine continues cloudy with pus and bacteria, and some degree of dysuria persists. In these cases the transurethral operation has provided reasonably good bladder function, but, because of persisting dysuria and pyuria, has fallen short of the perfect result. On the other hand open surgical enucleation as by perineal prostatectomy may be expected to bring about the return of the normal voiding interval and clear urine in nearly every instance, and for this reason may be favored by the surgeon as the operation of choice in the so-called younger group of patients with prostatic obstruction. I am referring to patients in the 55 to 65 age group who remain free of cardiovascular-renal disease, who have a long life expectancy, and therefore, will undergo open enucleation with very little increase in risk. In the remaining age groups from 65 to 75, and over 75 years, an increasing number of patients have advanced cardiovascular renal disease as well as other degenerative changes, and the risk of open enucleation increases until it becomes prohibitive. Unquestionably transurethral resection is a boon to these older patients because of the almost neglible risk to life and the short period of convalescence which will outweigh the slightly morbid state associated with persistent dysuria and pyuria in a small number of cases.

In closing these remarks, I wish to predict an even brighter future for transurethral resection. It is the operation of choice for older men. In certain good risk patients in the lower age group, the operation will compete for favor with open enucleation.

THE PATHOLOGY OF THE PROSTATE

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In this discussion of the changes found in the prostate in the various disease conditions, which are found, I wish to speak first of prostatitis. Inflammation of the prostate may be acute or chronic, and due to a variety of organisms. In young adults the common cause is gonorrhea. It seems hardly justifiable to say, as is stated in some textbooks, that most prostatitis, whether acute or chronic, is gonorrheal. In elderly men it is a much more reasonable assumption, that infection incident to prostatic hypertrophy and use of a catheter is probably not gonorrheal, but due to other bacteria.

Probably most infections of the prostate arise by extension from the urethra. Occasionally, the infection reaches the prostate through the blood stream. The infection may be severe and result in abscesses or may be rather of the nature of a diffuse interstitial inflammation. Either type of inflammation causes an enlarged

and tender prostate. The acute prostatitis may become chronic and last for a long time. It is not an uncommon finding in prostatic hypertrophy to find a rather extensive infiltration of lymphocytes and not infrequently minute abscesses are encountered. In many of these instances there has been no reason for the clinician to suspect the presence of prostatitis. Tuberculosis is occasionally encountered in the prostate and may give rise to extensive cavitation. There is evidence to indicate that often the tubercle bacilli have reached the prostate through the blood stream, rather than by extension directly from some other part of the urinary tract.

In prostatic hypertrophy, areas of hemorrhagic necrosis are rather frequently found. These are called infarcts. The way in which they arise is not clearly understood. Almost constantly, squamous metaplasia is present in adjacent ducts. The relation of this squamous metaplasia to the development of the infarcts is not at all clear. A somewhat comparable situation is present in the pancreas in instances of acute hemorrhagic pancreatitis, where again the relationship of the squamous metaplasia of the ducts and the development of the acute hemorrhagic pancreatitis is not known. Thrombosis, embolism, arteriosclerosis, and trauma have all been advanced as possible ways in which infarcts may develop in the prostate.

It is usually assumed that the prostate enlarges with age. Until the onset of puberty and growth of the testes the prostate is a very small organ. After the prostate has once reached its adult size it remains approximately the same size until late in life, averaging from fifteen to twenty grams in weight, unless it is the site of hypertrophy or inflammation.

Hypertrophy of the prostate great enough to cause urethral obstruction occurs in about 8 per cent of men over sixty years of age. The hypertrophy involves all lobes, but not necessarily to the same degree. The middle lobe may be much more markedly hypertrophied than the lateral lobes and project into the bladder and block the orifice of the urethra. Hypertrophy causes elongation, narrowing and angulation of the urethra. The cut surfaces of the prostate show multiple large and small rounded areas separated by dense connective tissue. Some of the nodules may be cystic. Commonly the smaller nodules are near the urethra and the larger more towards the periphery. The smaller ones commonly are made up of fibrous tissue and smooth muscle with few or no glands. This has led to the conception that prostatic hypertrophy starts in as fibromyomas which are later invaded by glands, and that prostatic hypertrophy starts in as fibromyomas which are later invaded by glands, and that prostatic hypertrophy is somewhat similar to a myomatous uterus.

Autopsy studies have revealed that in approximately 15 per cent of hypertrophied prostates, carcinoma is also present. Often there is room for argument as to whether many of these very small lesions are to be regarded as real carcinomas or as areas of hyperplasia in adenomas

By whatever method an enlarged prostate has been removed, it is the duty of the pathologist to be on the lookout for a carcinoma. To find a carcinoma is somewhat easier when one has the whole gland to examine, because then any areas of unusual induration, yellow areas, or places which are crumbly, are more easily found, and such areas should be the ones most carefully scrutinized. Since transurethral prostatectomy has come into vogue, it is much more difficult to pick out the above-mentioned types of tissue. The pathologist is greatly helped if the pieces last removed are submitted separately, because it is rather generally believed that most carcinomas develop in the posterior portion of the prostate. In the examination of material removed by transurethral resection, not less than twelve pieces should be examined, before one dares say that carcinoma is not present. In suspected cases of carcinoma of the prostate a punch biopsy obtained through a Silverman needle may give the desired information. It is to be remembered that the piece of tissue obtained in this manner is very small and the results should be considered of value only when a positive diagnosis of carcinoma is made. The carcinoma may be a well differentiated adenocarcinoma or a markedly anaplastic or a scirrhous carcinoma.

Other tumors occasionally occur in the prostate such as leiomyoma and sarcoma, but are rare. Leukemic infiltrations are also found at times.

REMARKS ON PREPARATION OF MANUSCRIPTS

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Saint Paul, Minnesota

It is like bringing coals to Newscastle to attempt to tell many of you how to write a paper or the form the paper should assume, as so many of you have written many articles and some of you have written books. I don't claim to be an authority on the subject; editing has been an avocation with me rather than a vocation. But I welcome the opportunity to say a few words to you about the writing of medical papers.

In the first place, I think it is a good rule not to write unless one has something to say. When you consider that there are about twelve hundred medical periodicals in existence, you can realize that there are a lot of medical papers published. But I think that when anybody has anything to say medically, he ought to say it.

As far as the method of writing a paper is concerned, we probably all have our own ideas. I have written a few and I have found that the easiest way is to take reading notes on cards which are numbered, putting down a full and accurate reference on each card.

It is well to make a preliminary outline before starting to write a paper to assure logical arrangement. The material contained on the cards which it is desired to include in the paper can then be transcribed under the proper heading and the number of the card noted so that later bibliographical reference in the paper may be easily and accurately made.

The title should be brief but descriptive. Your papers appearing under the Proceedings of the Minneapolis Surgical Society are indexed in the journal at the end of the year and a brief title that gives some idea of what the paper is about is essential in indexing.

I want to mention a few words that are often misused. So many authors misuse the word "case." They operated a case. You cannot operate a case; you operate on a patient. A case, according to Dorland, is the instance of disease with its attendant circumstances. The patient is not the case; the patient dies or recovers; the case terminates fatally or ends in recovery.

Another word is "pathology." So often it is said that there is no pathology present—that is, no science which deals with disease. What is meant is that there is no pathological condition present, no disease.

The word "temperature." It is often stated that the patient has no temperature. A patient always has a temperature even when he is dead. The patient has no fever.

Then the use of "I," "we," "the writer," and "the author." If you use one term you should use it the whole way through. Do not in one place say "I," then "we" and then "the author." There is no objection to saying "I" when you mean I.

Then "acute abdomen." This phrase is often used. A patient may have an acute inflammation in the abdomen such as an acute appendicitis but there is no such thing as "acute abdomen."

"Diseased condition" is frequently used when disease condition is meant.

In the preparation of the manuscript, rules are rather uniform and pretty well established. Some journals have minor differences, but as a rule, a manuscript should be typed in double space so that corrections can be easily made and the printer can see the corrections. This is impossible with single spacing. The manuscript must be the original copy and not the carbon copy. It is hard on the printer as well as the editor to have to read the carbon copy and, of course, the printers are reading all day long and it is hard on their eyes. The author should keep a carbon copy of the paper to compare with the proof when it comes back to he will know what liberty the editor has taken. I realize that there is often room for a difference of opinion and try not to change an author's meaning. If that occurs the author has the opportunity to make changes in the proof.

Illustrations should be sent in separately and not pasted on the manuscript pages. Each illustration should have the name of the author indicated, the top of the illustration should be designated, and the illustration numbered. It is always well to put the author's address at the end of the paper so we may know where to send the proof.

The author's name, of course, appears below the title followed by M.D. I can see no reason why a title such as F.A.C.S. should not follow the M.D. Medical school appointments may well be added below the name of the author. The name of a clinic in which a person works does not belong under the author's name but may appear in a footnote to designate his association.

The bibliography causes more difficulty than any other one item. Unless a list of references is very complete it should be called References rather than a Bibliography. All you have to do is to look at a copy of MINNESOTA MEDICINE and see what information should appear in the bibliography. First is the name of the author and his initials followed by a colon; then the title of the paper. We do not capitalize the words in the title unless they are proper nouns or the reference is to a German article. Then comes the name of the journal in which it appears properly abbreviated, with the volume number, a colon, the page numbers and the date. It is generally well to put the inclusive number of pages, as this gives the reader an idea of the extent of the article referred to. In case of reference to a book, the author's name and initials are given, followed by a colon, the title of the book, location (the city) of the publisher and his name, and the date of publication. If reference is to a page in the book or if there is more than one volume, the number of the volume and the page number should be given.

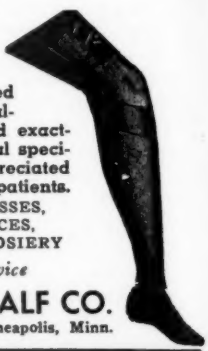
I want to say that we always try in the editorial office to coöperate with the Minneapolis Surgical Society and the other societies that publish their proceedings in MINNESOTA MEDICINE from time to time. It is a difficult job for the secretary or recorder to get the material in promptly. If one paper does not come in, the publication for that meeting is held up; or if one individual who has discussed the paper does not send in his copy, publication is held up. Publication of the proceedings of the Minneapolis Surgical Society have been sporadic, as you know, because members have not done their part in turning in their material.

Sometimes we have had reprints of articles turned in instead of original papers. If we are going to publish an address given before the Society and index it, we can scarcely print an article that has appeared elsewhere. So I would suggest that reprints be not sent in.

The meeting adjourned.

FREDERICK A. OLSON, M.D.
Recorder

RELIABILITY!



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✦ Reports and Announcements ✦

MEDICAL BROADCAST FOR JANUARY

The following radio schedule of talks on medical and dental subjects by William A. O'Brien, M.D., Director of Postgraduate Medical Education, University of Minnesota, is sponsored by the Minnesota State Medical Association and the Minnesota State Dental Association:

January 1— 9:15 a.m. (WCCO) Malaria
11:30 a.m. (WLB) Medicine in the News
January 8— 9:15 a.m. (WCCO) Dysentery
11:30 a.m. (WLB) Medicine in the News
January 15— 9:15 a.m. (WCCO) Filariasis
11:30 a.m. (WLB) Medicine in the News
January 22— 9:15 a.m. (WCCO) Relapsing Fevers and Leishmaniasis
11:30 a.m. (WLB) Medicine in the News
January 29— 9:15 a.m. (WCCO) Dental Surgery
11:30 a.m. (WLB) Medicine in the News

NATIONAL CONFERENCE ON MEDICAL SERVICE

The 18th annual meeting of the National Conference on Medical Service will be held on February 13 in the Red Lacquer Room of the Palmer House in Chicago.

This conference is the only discussion meeting of its kind on the social and economic relationships of medicine and it provides the one opportunity of the year for representatives of organized medicine from all parts of the country to get together for informal discussion of the grave issues confronting the profession today.

The conference is not in any sense an official body of organized medicine. But action initiated in its discussions last year was crystallized in the formation of the New Council on Medical Service and Public Relations by the House of Delegates of the American Medical Association in June. Its forum affords the rank and file of medicine an important opportunity for expression which may have far-reaching results for the future of medicine.

The program this year is not yet complete but it is understood that it will stress the postwar problems and responsibilities of medical organized medicine which must provide not only for the orderly reëstablishment of thousands of medical officers returning from military service, but must foster and guide a constructive national program for the improvement and better distribution of medical services to the American people.

The 1944 conference officers are W. L. Burnap, M.D.,

From the painting by George Frederick Watts, "HOPE"

AS EVER-GROWING numbers of cases yield to liver therapy, pernicious anemia emerges from among the one-time "incurables." Today, men and women who must, can face this condition with justifiable optimism—for there is hope . . .

And so the laboring physician has two allies—a proven medicinal, and the fighting spirit of his patient.

When his choice of a liver product falls upon Purified Solution of Liver, Smith-Dorsey, he may count a third ally—the dependability of the maker. For Smith-Dorsey's product comes from laboratories capably staffed . . . equipped to the most modern specifications . . . geared to the production of a strictly standardized medicinal.

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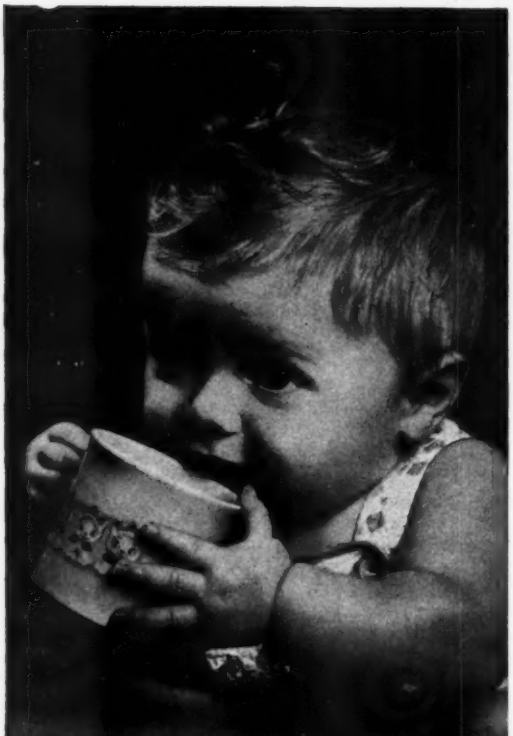

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In accordance with an established precedent the meeting is held on the day before the Annual Congress on Medical Education and Licensure so that as many as possible can arrange to be present at both meetings. Every member of organized medicine is cordially invited to attend and every state association is especially urged to see that it is well represented.

CONTINUATION COURSE IN OTOLARYNGOLOGY

Center for Continuation Study, University of Minnesota, announces a continuation course in otolaryngology for physicians who limit their practice to ophthalmology and otolaryngology. It will be given February 7-11, 1944. Registration limited to fifty physicians.

Because the rooms of the Center for Continuation Study are occupied by military units the course will be given in one of the leading downtown hotels in Minneapolis, and at the University of Minnesota Hospitals. Early registration is desirable in order that advanced hotel reservations may be made. Upon receipt of $3.00 the enrollee will be notified to communicate at once with the hotel in order to secure space. Further information may be obtained at the Center for Continuation Study, University of Minnesota, Minneapolis 14, Minnesota.

BLUE EARTH VALLEY SOCIETY

At the annual meeting of the Blue Earth Medical Society held in November, the following officers were reëlected to serve another year: President, Dr. M. D. Cooper, Winnebago; secretary-treasurer, Dr. J. L. Mills, Winnebago.

Dr. J. J. McGroarty of Easton presented a paper on "Acute Pancreatitis" and Dr. A. W. Sommer of Elmore spoke on "Premature Infants."

LYON-LINCOLN COUNTY SOCIETY

Dr. Titus C. Kreuzer of Marshall will serve as president of the Lyon-Lincoln County Medical Society this year as a result of his election to office at the annual meeting last fall. Other officers elected for the year are: Dr. V. H. Valentine, Tracy, vice president; Dr. W. G. Workman, Tracy, secretary-treasurer.

Appointments to committees are as follows:

Contact, Advisory and Public Health Committee—Drs. B. C. Ford, Marshall; A. D. Hoidale, Tracy; E. T. Sanderson, Minneota; P. E. Hermanson, Hendricks; A. L. Vadheim, Tyler; George Friedell, Ivanhoe.

Legislative Committee—Drs. F. D. Gray, Marshall; W. H. Valentine, Tracy.

Dr. W. W. Yaeger of Marshall was elected delegate to the State Association meeting with Dr. P. E. Hermanson as alternate.

RENVILLE COUNTY SOCIETY

Dr. A. M. Fawcett of Renville was elected president of the Renville County Medical Society for the coming year at the annual meeting held in November. Dr. R. C. Billings of Franklin was elected vice president,

and Dr. R. C. Erickson of Hector, secretary-treasurer. Dr. W. A. Brand of Redwood Falls was reëlected censor.

Delegate to the State Association meeting is Dr. J. Dordal of Sacred Heart. Dr. A. A. Passer of Olivia was chosen alternate.

ST. LOUIS COUNTY SOCIETY

"Price Control and Inflation" was the subject of the address given by Oscar B. Jesness, chief of the division of agricultural economy at the University of Minnesota, before members of the St. Louis County Medical Society at their annual meeting in Duluth, December 9, at the Northland Country Club.

Dr. Walter E. Hatch took office as president for the coming year and the following were elected to serve with him: Dr. C. N. Harris, Hibbing, vice president; Dr. R. P. Buckley, Duluth, secretary-treasurer. Dr. W. J. Ryan was chosen as president-elect to take office in 1945.

WASHINGTON COUNTY MEDICAL SOCIETY

At the annual meeting of the Washington County Medical Society held on December 14, the following officers were elected for 1944: President, Dr. Ray G. Johnson; first vice president, Dr. Carnot H. Sherman; second vice president, Dr. George McH. Ruggles; secretary-treasurer, Dr. E. Sydney Boleyn; delegate, Dr. E. Sydney Boleyn; alternate, Dr. W. R. Humphrey.

The scientific program was presented by Dr. Everett K. Geer, who interpreted 72 x-ray films taken from positive reactors among teachers and pupils in the Stillwater schools. The number of tests made was 659.

WOMAN'S AUXILIARY

MRS. F. S. MCKINNEY, *President*
Minneapolis, Minnesota
MRS. J. R. AURELIUS, *Publicity Chairman*
Saint Paul, Minnesota

GOODHUE COUNTY

Mrs. R. F. Hedin, publicity chairman, reports that a well-planned program has been adopted for the year under the guidance of Mrs. W. W. Liffrig, president.

At the first meeting on October 14 at Mrs. E. M. Baldigo's home, it was decided to send four *Readers Digest* subscriptions to servicemen overseas. Mrs. R. V. Sherman secured the names of volunteers to sell Christmas Seals at the postoffice and the group voted to support the Medical and Surgical Relief program. Mrs. Baldigo was appointed chairman of the latter committee.

At the November meeting at Mrs. Hedin's home, Mrs. Liffrig read a letter from Our Lady of Good Counsel Free Cancer Home in Saint Paul thanking the members for their offer to help the Home in securing drugs and making dressings. This work will come under the supervision of the Red Cross Committee headed by Mrs. L. E. Claydon.

At the December meeting at the home of Mrs. M. H.

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With Any Of These Conditions?

Spencer Abdominal Supporting Corset shown open revealing inner support. This is a SEPARATE section, adjustable to the corset section and the patient's figure by means of flat tapes that emerge on outside of corset.

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Cremer, Mrs. R. V. Sherman discussed the Wagner-Murray-Dingell Bill with the group. A five-dollar Christmas Seal Bond was purchased by the Auxiliary. The dinner meeting at the St. James Hotel with the doctors for December 16 was discussed and plans made to read letters from auxiliary members who were away with their husbands in service.

Mrs. Liffrig's very active committee members are: *Program*—Mrs. R. V. Sherman; *Health and Hygiene*—Mrs. R. Aanes; *Ways and Means*—Mrs. G. Kimmel; *Public Relations*—Mrs. Howard Claydon; *Historian*—Mrs. E. M. Baldigo.

HENNEPIN COUNTY

The Annual Silver Tea for Sarahurst rehabilitation home for patients from Glen Lake Sanatorium was held Friday, December 3, in the Medical Arts Lounge.

Mrs. Harold Wahlquist presided at the short business meeting which was followed by the Christmas program carrying out a Scandinavian theme under the direction of Mrs. Rhoda Snell Glad as narrator, Mrs. Frank Judgeon, violinist, and Mrs. Richard Giere, pianist.

Mrs. W. F. Widen, tea chairman and her committee wore Scandinavian costumes. Wives of all doctors in the armed services stationed in this area were guests.

The auxiliary will also participate in the all-city servicemen's Christmas with donations of cookies, fruit cakes, cigarettes and gifts.

NICOLLET-LE SUEUR COUNTIES

Nicollet and Le Sueur County Medical Society and Auxiliary met at the Cook-E-Jar in St. Peter Wednesday for a 6:30 dinner in honor of Dr. and Mrs. E. W. Miller. Dr. Miller is leaving St. Peter Hospital for Anoka where he will be superintendent of the hospital. Gifts were presented to both Dr. and Mrs. Miller.

Dr. Wilbur Rucker of the Ophthalmology section at Rochester spoke to the men and the women spent the evening making cancer dressings for Our Lady of Good Counsel Free Cancer Home in St. Paul.

WASHINGTON COUNTY

Mrs. F. S. McKinney, state president, was guest speaker at the meeting held in November at the home of Mrs. J. W. Stuhr.

Mrs. McKinney talked on the recruitment of nurses and explained that medical auxiliaries throughout Minnesota will assist the State Nurses Association in this work. Mrs. F. M. McCarten has been named local chairman.

The State President also urged the group to support the Medical and Surgical Relief project and Mrs. Stuhr writes that good results were obtained by auxiliary for this cause.

Prizes were awarded for the best essays written for the T.B. contest and the prize winning papers will be read at a later meeting of the group.

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AN INVITATION—The facilities of these institutions are available for all reputable members of the medical profession.

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Of General Interest

Dr. Ferdinand L. R. Koch has returned to New York City where he has accepted a teaching position at Bellevue Hospital.

* * *

Dr. Melvin Vik has returned to his practice at Onamia following a two months' stay in Arizona because of ill health.

* * *

Dr. Donald C. Balfour of Rochester was recently made president-elect of the Inter-State Post Graduate Medical Association of North America.

* * *

Dr. D. T. Schuele of Chatfield left for Norfolk, Virginia, December 26, to report for duty as a Lieutenant in the medical corps of the Navy.

* * *

Dr. Donald J. McNairy has recently been named Junior Consultant on the Mayo Clinic staff in the Dermatology Department at Rochester.

* * *

Dr. Howard M. Odel of Rochester received his commission of Lieutenant in the medical corps of the Navy and reported for duty at the National Naval Medical Center, Bethesda, Maryland, in December.

Dr. W. J. Bushard has sold his practice at Bird Island to Dr. Howard E. Johnson of Ortonville and has accepted a fellowship in the Eye Department of the University Hospitals, Minneapolis.

* * *

Dr. C. L. Sherman of Luverne has been appointed by Governor Thye as a member of the State Medical Advisory Board for the fourth district of Selective Service in Minnesota.

* * *

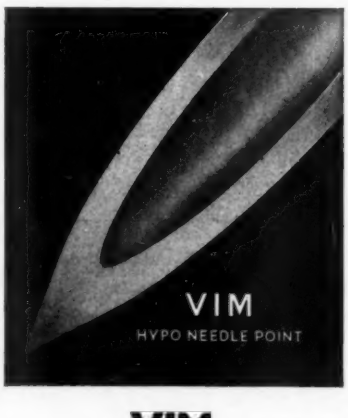
Dr. Edward Burch, Saint Paul, has just been made a Lieutenant Colonel in the Medical Corps and is now Executive Officer at O'Reilly General Hospital, Springfield, Missouri.

* * *

Sad news has been received in the report of the death in Africa of Lieutenant William W. Adson, son of Dr. A. W. Adson of Rochester, on November 22, following wounds received in action.

* * *

Dr. Leo C. Culligan of Minneapolis has announced his association with Dr. Arthur C. Strachauer and Dr. Frank R. Hirshfield at 350 Medical Arts Building, with practice limited to surgery.



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Dr. Cecil A. Wilmot of Litchfield received his captaincy in November. Since entering the Army in September, 1942, he has spent nearly a year overseas and is at present in a station hospital somewhere in the Aleutian area.

* * *

Dr. Wade R. Humphreys of Stillwater attended the Inter State Medical Assembly in Chicago in October and went on from there to visit his former home in Virginia. Dr. Humphreys returned the latter part of November.

* * *

Dr. Philip N. Bray of Duluth has left for duty in the United States naval reserve medical corps. He has been commissioned a Lieutenant Commander and is stationed at the U. S. Navy Hospital in Long Beach, California.

* * *

Dr. C. H. Sherman of Stillwater has taken over the practice of the late Dr. E. V. Strand of Bayport, continuing his office hours at Stillwater. Dr. Sherman practiced in Bayport from 1923 to 1929, when he left to take graduate work.

* * *

Dr. Richard N. M. Nay, former secretary of the Association of Fellows of the Mayo Foundation, was named president of the group at the recent annual election. Dr. J. J. Manning was elected vice president and Dr. L. P. Hoyer, secretary. The new officers all reside in Rochester.

* * *

Dr. Cecil J. Watson, head of the department of medicine in the University of Minnesota Medical School, will be president of the Central Society for Clinical Research in 1944. Dr. Watson's election was announced following a meeting of the Society in November. The society membership covers the north central states.

* * *

Dr. Bruce Jarvis of Lowry is leaving his practice there to resume his work in missionary hospitals in China, where he spent some time before coming to Lowry six years ago. Dr. Jarvis will take a refresher course at the University of Minnesota before going to his assignment in China.

* * *

Dr. D. O. N. Lindberg, formerly senior physician and director of roentgenology at the State Sanatorium, Iowa City, Iowa, is the new superintendent of Buena Vista Sanatorium, Wabasha, succeeding Dr. B. J. Terrell, who is now affiliated with the Sanatorium at Nopeming.

* * *

Dr. Gershom J. Thompson, formerly of Rochester, has been on duty until July of this year in Norman, Oklahoma, since entering the service fourteen months ago. On July 12 he was assigned as Chief of Urology at the National Naval Medical Center, Bethesda, Maryland, and on September 1 he was promoted to the rank of Commander.

* * *

Several positions are open for medical officers at the United States Veterans Hospital, Minneapolis, according to an announcement received from the office of the

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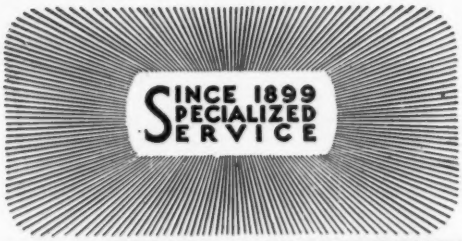

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MEDICINE—Courses to be announced in January.

GYNECOLOGY—Two Weeks' Intensive course starting February 7. Clinical Course.

OBSTETRICS—Two Weeks' Intensive Course starting February 21.

ANESTHESIA—One-Week Course in Continuous Caudal Anesthesia for Obstetrics.

OPHTHALMOLOGY—Clinical Course.

OTOLARYNGOLOGY—Special and Clinical Courses.

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* * *

Dr. Gaylord W. Anderson, on leave from his post as head of the division of preventive medicine and public health, University of Minnesota Medical School, has been made head of the Army's division of medical intelligence.

Since being given leave by the university in 1942, Dr. Anderson has been serving in a public health capacity in the office of the surgeon general of the Army, Washington, D. C. He has recently been promoted to the rank of Lieutenant Colonel.

* * *

Major General James Carre Magee, retired on May 31, 1943, as Surgeon General of the Army, has been named executive officer of the information service of the division of medical sciences of the National Research Council. His duties will be to make available medical information pertaining to the war. This service was established by the Council under a recent grant of the Johnson and Johnson Research Foundation, New Brunswick, N. J., by which $75,000 was made available. In the service all his life, General Magee supervised the enormous expansion of the medical corps and the medical program which has led to the remarkable health record of the Army thus far.

* * *

The following Minnesota surgeons were accepted into fellowship in the American College of Surgeons in 1943: Harold G. Benjamin, Minneapolis; John B. Beuning, Saint Cloud; Leonard K. Buzzelle, Minneapolis; John A. Dahl, Minneapolis; John C. Feuling, Bovey; Richard W. Giere, Minneapolis; John H. Grindlay, Rochester; George E. Hudson, Minneapolis; Luverne W. Johnsrud, Hibbing; Bert G. Levin, Saint Paul; Edward C. Maeder, Minneapolis; Carl H. Mattson, Saint Paul; Wallace P. Ritchie, Saint Paul; Otto J. Seifert, New Ulm; Louis Sperling, Minneapolis; Lloyd A. Stelter, Minneapolis; Robert J. Tenner, Rochester; Alfred Uihlein, Rochester; Francis C. Usher, Rochester.

* * *

Under command of Lieut. Col. Wallace D. Hunt, assigned to the Minneapolis Health Department by the U. S. Public Health Service, organization of an emergency hospital unit is being completed there. Composed for the most part of members of the Minneapolis General Hospital staff, the unit will be made up of fifteen physicians and forty nurses, all to be sworn in as members of the U. S. Public Health Service. Arrangements already have been made for quick occupancy of any one of several large hotels should an emergency so require. At such time the military authorities would evacuate the premises and equip the building for hospital purposes. The emergency hospital unit then would take over until military authorities sent in their own doctors and nurses. The organization being developed in Minneapolis is part of a nationwide program of establishing such hospital units near military bases.

In Memoriam

HARRY T. KING

Dr. Harry T. King of Minneapolis died October 10, 1943, at the age of forty-seven.

Dr. King was born in Minneapolis, May 30, 1896. He graduated with a B.S. degree from St. Thomas College, Saint Paul, in 1918 and obtained his medical degree from Marquette Medical School in 1922. After serving his internship at Madison General Hospital, he took postgraduate training at the Lying-In Hospital, New York City.

Dr. King practiced in Minneapolis and was a member of the Hennepin County Medical Society, the Minnesota State and American Medical Associations.

* * *

FRED SHEPPARD

Dr. Fred Sheppard of Hutchinson, Minnesota, passed away September 25, 1943, following an illness of several years.

Dr. Sheppard was born in Boon Lake Township, Renville County, Minnesota, July 5, 1869. He attended high school at Mankato and obtained his medical degree from the University of Minnesota in 1895. After taking postgraduate work at the Chicago Polyclinic, he practiced from 1895 until 1897, at Henning, Minnesota, and from 1897 until 1898, at Lester Prairie, Minnesota.

Dr. Sheppard was married August 18, 1900, to Magnolia Streeter of Hutchinson. Mrs. Sheppard passed away in 1932, and a son, Dale, at the age of twenty-one. One son, Hal, who lives in Seattle, and three grandchildren survive.

Dr. Sheppard served as deputy coroner of McLeod County and was a member of the McLeod County Medical Society, the Minnesota State and American Medical Associations.

* * *

ELWYN VINCENT STRAND

Born in Marine-on-the-St. Croix, Minnesota, on May 24, 1902, Dr. Elwyn V. Strand yielded to the "Grim Reaper" at his home in Bayport, Minnesota, on Saturday, November 27, 1943, after a long illness.

He received his primary education in Marine-on-the-St. Croix and Stillwater High School. His academic and medical degrees were obtained at the University of Minnesota, 1928, and he served his internship at Ancker Hospital, 1928-1929, after which he located and practiced medicine in Bayport until his death.

He did postgraduate work at Polyclinic Hospital, New York City. He was a member of the Washington County Medical Society, Minnesota State Medical Association, American Medical Association, Phi Alpha Pi medical fraternity, and the honorary medical fraternities of Incus and Alpha Omega Alpha.

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He served as president of the Washington County Medical Society and was very active as chairman of several important committees; he also served as chairman of the Lakeview Memorial Hospital staff, of which he was a member. He was coroner of Washington County for several years and health officer of Bayport and Lake Elmo. He was actively interested in Boy Scouts and their doings. He was president of the Bayport Realty Company, the Bayport Improvement Club, and the Bayport School Board. He was also a member of the Lions Club, the Cotillion Club of Stillwater, Monitor Lodge No. 424, the Vasa Order of America, a life member of the Washington County Historical Society, and worshipped at the First English Lutheran Church of Bayport.

He was married to Miss Gertrude Marie Johnson in South Saint Paul July 5, 1930. Surviving him are his wife, four sons, his mother, two brothers and four sisters, besides numerous other relatives and a host of admirers and friends.

Funeral services were held November 29, 1943, and interment took place at Bayport. Members of the Washington County Medical Society attended as honorary pallbearers, and members of the Washington County Auxiliary were present in a body, as were also the members of the Lions' Club.

As a man Dr. Strand was blessed with a pleasing personality and lasting qualities that endeared him to all who knew him. He could see all sides of a problem and be fair to them and fair in his judgment of those who entertained different views. His capacity for work was exceptional, even up to the very last; he never neglected any task or shunned responsibilities he assumed or had passed on to him.

In his profession he enjoyed a success seldom attained at so early an age, and his fellow practitioners conceded him the friendships and honors due a generous and ethical competitor.

He was an earnest and diligent student and eagerly embraced every opportunity to improve his knowledge and master any new discovery of practical value in his work to keep it up to the high standard he had set for himself.

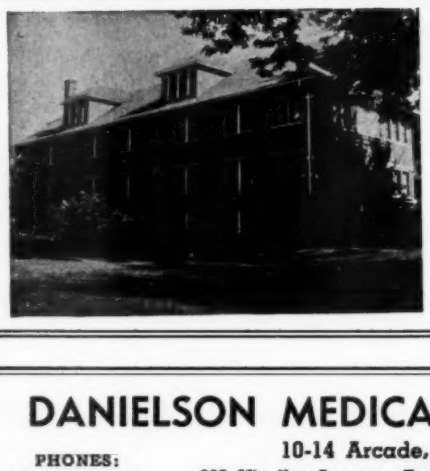
He knew medical ethics and always observed its principles in his practice. He will be greatly missed in this community and many regret his passing.

—E. Sydney Boleyn

EDWARD A. ZAWORSKI

Dr. E. A. Zaworski of Minneapolis, a leader of Polish American activities in Minnesota, died suddenly of a heart attack, November 25, 1943, at the age of fifty-nine.

Born at Ord, Nebraska, February 4, 1885, Dr. Zaworski obtained his high school training at Quincy, Illinois, and an A.B. degree at Quincy College, Quincy, Illinois,



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in 1906. He graduated from the Creighton University Medical School of Omaha, Nebraska, in 1911.

Dr. Zaworski came to Minneapolis in 1911, where he has been active in practice and civic affairs since. He was vice president of the Northeast State Bank in Minneapolis and president of the Minnesota Polish Publishing Company, which issues *Nowiny Minnesokrie*, the only Polish paper in the Northwest. He was also chief medical examiner of the Polish White Eagle Association, a medical examiner of the Northeast Minneapolis Draft Board and has directed the Community Fund and Red Cross drives in Northeast Minneapolis. He was a member of the Hennepin County Medical Society, the Minnesota State and American Medical Associations.

Dr. Zaworski is survived by his wife, a daughter, Mrs. M. L. Harrington of Minneapolis, and four sons, all in service.

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BOOK REVIEWS

Books listed here become the property of the Ramsey, Hennepin and St. Louis County Medical libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

NASCENT ENDOCRINE THERAPY. John Franklin Ritter, M.D. 317 pages. Caldwell, Idaho: Caxton Printers, 1940.

SURGICAL ERRORS AND SAFEGUARDS. Fourth Edition. Max Thorek, M.D., LL.D., D.C.M., F.I.C.S. Professor of Surgery, Cook County Graduate School of Medicine, Chicago, etc.; Foreword by Sir Hugh Devine, M.S., Hon. F.R.C.S. (England). 1085 pages. Illus. Price, $15.00, cloth. Philadelphia: J. B. Lippincott Co., 1943.

YEAR BOOK OF GENERAL MEDICINE, 1943. George F. Dick, M.D., et al. 784 pages. Illus. Price, $3.00, cloth. Chicago: Year Book Publishers, 1943.

Classified Advertising

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